MEDICAL LIBRARY

The Research Quarterly

of the

American Physical Education Association

VOL. V DECEMBER, 1934

A Discussion of the Requirement in Physical Education for Women in Colleges and Universities. *Violet H.*

The Education of Men Teachers of Physical Education for Public School Service in Selected Colleges and Universities. *W. E. Peik and G. B. Fitzgerald*

Report of Committee on Objectives and Policies. *W. H. Gaine, Chairman*

Flarimeter Tests of Circulatory Fitness. *Philip F.*

The Attitudes of High School Girls Toward Physical Activities. *Theresa W. Anderson*

The Progressive-Part vs. the Whole Method of Learning Motor Skills. *Clayton T. Sharp*

Athletic Ability and Scholarship—A Measure of Intelligence Comparing Scholarship Abilities of Athletes and Non-Athletes. *Elwood C. Davis, Phillip and Lydia A.*

Posture Photography—A Photographic Device to Record the Plumb Line in the Individual Posture Picture. *Bertha H. Leonard*

Coordination Tests in Swimming. *Hilda Thurber*

Curriculum Content and Suitable Activities. *Mabel B.*

A Comparison of the Subject Selections and the Scholastic Records of Athletes and Non-Athletes. *Harvey*

Curriculum Study for the Public Schools Section of the American Physical Education Association. *Lawrence Chairman*

Bibliography for 1933. *C. H. Mc*

Book Reviews

Index for Volume V (1934)

Published March, May, October, and December

Address: 311 Maynard, Ann Arbor, Michigan Subscription

PERIODICALS
BOOKS
GENERAL PRINTING

Prompt Service
Workmanship
Moderate Prices

Ask for Quotations

THE ANN ARBOR PRESS
317 Maynard Street
Ann Arbor Michigan

Copyright 1930 by American Physical Education Association
Entered as second class matter March 22, 1930, at the Post Office at Ann Arbor, Michigan, under the act of March 3, 1879

The Research Quarterly

of the

American Physical Education Association

Vol. V DECEMBER, 1934 No. 4

CONTENTS

A Discussion of the Requirement in Physical Education for Women in Colleges and Universities. *Violet B. Marshall* 3
The Education of Men Teachers of Physical Education for Public School Service in Selected Colleges and Universities. *W. E. Peik and G. B. Fitzgerald* 18
Report of Committee on Objectives and Policies. *W. W. H. Mustaine, Chairman* 29
Flarimeter Tests of Circulatory Fitness. *Philip V. Wells, D.Sc.* 44
The Attitudes of High School Girls Toward Physical Activities. *Theresa W. Anderson* 49
The Progressive-Part vs. the Whole Method of Learning Motor Skills. *Clayton T. Shay* 62
Athletic Ability and Scholarship—A Résumé of Studies Comparing Scholarship Abilities of Athletes and Non-Athletes. *Elwood C. Davis, Ph.D., and John A. Cooper, D.Ed.* 68
Posture Photography—A Photographic Device to Include the Plumb Line in the Individual Posture Picture. *Bertha H. Leonard* 79
Coordination Tests in Swimming. *Colin Theodore Wilson* 81
Curriculum Content and Suitable Minors. *Mabel E. Rugen, Ph.D.* 89
A Comparison of the Subject Elections and the Scholastic Records of Athletes and Non-Athletes. *Harmon S. Jones* 101
Curriculum Study for the Public Schools Section of the American Physical Education Association. *Laurentine B. Collins, Chairman* 111
Bibliography for 1933. *G. B. Affleck* 127
Book Reviews 151
Index for Volume V (1934) 157

CONTRIBUTING EDITORS

G. B. Affleck
Dorothy Ainsworth, Ph.D.
V. S. Blanchard
John Bovard, Ph.D.
David K. Brace, Ph.D.
A. D. Browne, M.D.
C. L. Brownell, Ph.D.
Rosalind Cassidy
Charles C. Cowell, Ph.D.
Frederick Cozens, Ph.D.
A. Lester Crapser, Ph.D.
Ruth Elliott, Ph.D.
Marguerite M. Hussey, Ph.D.
Peter V. Karpovich, M.D.
Charles H. Keene, M.D.
Frank L. Kleeberger, M.D.
Clair V. Langton, D.P.H.
William R. LaPorte
Mabel Lee
Frank Lloyd, Ph.D.
F. W. Luehring
C. H. McCloy, Ph.D.
J. H. McCurdy, M.D.
C. M. Miles
Gertrude E. Moulton, M.D.
Jay B. Nash, Ph.D.
N. P. Neilson
D. Oberteuffer, Ph.D.
Frederick Prosch
F. R. Rogers, Ph.D.
Harry A. Scott, Ph.D.
J. R. Sharman, Ph.D.
George T. Stafford
Arthur H Steinhaus, Ph.D.
Alden W. Thompson
W. W. Tuttle, Ph.D.
Agnes Wayman
Jesse F. Williams, M.D.

Published March, May, October, and December
ELMER D. MITCHELL, *Editor*
311 Maynard, Ann Arbor, Michigan
Subscription $3.00 per year Single Copies, $1.00 each.

American Physical Education Association Officers

President, STRONG HINMAN, Public Schools, Wichita, Kansas.
Vice-President, AGNES WAYMAN, Columbia University, New York City.
Secretary-Editor, E. D. MITCHELL, University of Michigan, Ann Arbor.
Chairman Field Service, JAMES E. ROGERS, 315 Fourth Ave., New York City.

Additional Members of Executive Committee
Mary Channing Coleman, North Carolina College for Women, Greensboro.
Ruth Elliott, Wellesley College, Wellesley, Massachusetts.
Jessie R. Garrison, Dept. of Education, Montgomery, Alabama.
William R. LaPorte, University of Southern California, Los Angeles.
Guy S. Lowman, University of Wisconsin, Madison.
W. G. Moorhead, Dept. of Public Instruction, Harrisburg, Pennsylvania.
Jay B. Nash, Ph.D., New York University, New York City.
Clare Small, University of Colorado, Boulder.
Ruth Weythman, State Normal School, Bellingham, Washington.

Officers of Eastern District Association
President, Jay B. Nash, Ph.D., New York University, New York City.
Vice-President, Franklin Gray, Director of Physical Education, Springfield, Mass.
Secretary-Treasurer, Grace Jones, Public Schools, Summit, N. J.

Officers of Mid-West District Association
President, Guy S. Lowman, University of Wisconsin, Madison.
Vice-President, Helen N. Smith, University of Cincinnati, Cincinnati, Ohio.
Secretary-Treasurer, Birch Bayh, Public Schools, Terre Haute, Indiana.

Officers of Central District Association
President, Clare Small, University of Colorado, Boulder.
President-Elect, Louis Hutto, Des Moines, Iowa, Public Schools.
Vice-President, Edna McCullough, Kansas State Teachers College, Emporia.
Secretary-Treasurer, A. O. Anderson, Public Schools, Kansas City, Missouri.

Officers of Southern District Association
President, Jessie R. Garrison, Dept. of Education, Montgomery, Alabama.
President-Elect, Harry A. Scott, Ph.D., Rice Institute, Houston, Texas.
Vice-President, Mrs. Mary E. L. Soule, University of Georgia, Athens.
Secretary, Romayne Berryman, Mississippi State College for Women, Columbus.
Treasurer, Bennie Strickland, Austin, Texas.

Officers of Northwest District Association
President, Ruth Weythman, State Normal School, Bellingham, Washington.
First Vice-President, Christian Brocar, Public Schools, Spokane, Washington.
Second Vice-President, Margaret Duncan, University of Oregon, Eugene.
Secretary-Treasurer, R. E. Belshaw, University of Washington, Seattle.

Officers of Southwest District Association
President, W. R. LaPorte, University of Southern California, Los Angeles.
Vice-President, Ina Gittings, University of Arizona, Tucson.
Secretary-Treasurer, Wilma Jeppson, Brigham Young University, Provo, Utah.

Members of Legislative Council
(The Officers and Executive Committee are also included.)
Ruth H. Atwell, District of Columbia
W. C. Batchelor, Recreation Section.
Birch E. Bayh, Indiana State Society.
Marjorie Bouvé, Massachusetts State Society
John Brown, Jr., M.D., Y.M.C.A. Physical Directors' Society.
A. D. Browne, M.D., Tennessee Society.
William Burdick, M.D., Maryland Society.
C. H. Burkhardt, New York State Society.
L. R. Burnett, M.D., Administrative Directors' Society.
Rosalind Cassidy, National Association of Directors of Physical Education for College Women.
Ellis H. Champlin, New York State Society.
Helen Cooper, Rhode Island State Society.
Charles W. Davis, California State Society.
Henry E. Detherage, Missouri State Society.
Ruth Elliott, Teacher-Training Section.
Herschell Emery, Oklahoma State Society.
Edgar G. Everts, Minnesota State Society.
Henry M. Foster, Washington State Society.
Charles Forsythe, Michigan State Society.
Edith M. Gates, Y.W.C.A. Physical Directors' Society.
Edith M. Gates, Women's Division, N. A. A. F.
George Gauthier, Men's Athletic Section.
Horace Geisel, Pennsylvania State Society.
Major E. V. Graves, Virginia State Society.
Karl Greenlee, Iowa State Society.
Willard N. Greim, Colorado State Society.
Helen W. Hazelton, Indiana State Society.
W. L. Hughes, Ph.D., College Men's Physical Education Section.
Dorothy Nash Hutchinson, North Carolina State Society.
Allen G. Ireland, M.D., New Jersey Society.
Hiram A. Jones, PhD., New York Society.
Barbara Ellen Joy, Camping Section.
C. Walter Kadel, Delaware State Society.
Clyde Knapp, Nebraska State Society.
Louis Kulcinski, Illinois State Society.
A. S. Lamb, M.D., Canada.
Clair V. Langton, D.P.H., Oregon Society.
Helen A. Lengyel, Maine State Society.
J. H. McCurdy, M.D., National Collegiate Athletic Association.
J. H. McCurdy, M.D., Research Section.
Harlan G. Metcalf, Therapeutic Section.
W. G. Moorhead, Pennsylvania Society.
Alfreda Mosscrop, Alabama State Society.
Robert Munsey, California State Society.
Ruth L. Murray, Michigan State Society.
J. H. Nichols, M.D., Ohio State Society.
Harry Nissen, Massachusetts State Society.
D. Oberteuffer, Ph.D., Ohio State Society.
Julia Post, South Carolina State Society.
Charles J. Prohaska, M.D., Society of State Directors.
Frederick Prosch, Pennsylvania Society.
R. N. Sandlin, Texas State Society.
Helen Saum, Kansas State Society.
C. W. Savage, College Physical Education Association.
C. W. Savage, Ohio State Society.
Mazie V. Scanlan, New Jersey Society.
Henry J. Schnelle, Connecticut Society.
Carl P. Schott, Ph.D., West Virginia Society.
Mrs. Mary E. L. Soule, Georgia Society.
S. C. Staley, Illinois State Society.
H. T. Taylor, Kentucky State Society.
Eline von Borries, Women's Athletic Section.
A. P. Way, M.D., New York State Society.
Emily White, Dancing Section.
J. F. Williams, M.D., Health Education Section.
Charles C. Wilson, Public School Section.

A Discussion of the Requirement in Physical Education for Women in Colleges and Universities*

By VIOLET B. MARSHALL

Director, Department of Physical Education for Women, University of California, Berkeley

THE QUESTION as to whether physical education should be a requirement for the college degree has been raised in various institutions within the past two years, first as a question of educational policy, and second as a convenient point for a reduction in expenses.

A committee was appointed by the National Association of Directors of Physical Education for College Women at its meeting in July, 1932, to study this question and to prepare a statement which would be helpful to any member who might be called upon to meet this issue in her own institution. The replies to the letter which was sent by this committee to all members, and the statements of many leaders in education and medicine, indicate that the question is viewed from many different angles and that its larger relationships are frequently overlooked. It therefore seems necessary to outline certain general considerations before attacking the specific problem. Some factual material which was sent by various colleges will be found in the appendix.

CONCEPTION OF THE PURPOSE AND FUNCTION OF NORTH AMERICAN COLLEGES AND UNIVERSITIES

The college, properly speaking, is an institution for providing instruction beyond the secondary school in science and the liberal arts. The colleges, which are very often private institutions, are largely residential and are expected to provide all the social, recreational, and cultural advantages that parents desire for their children, including close supervision of health. The college, in fact, functions as a parent with greatly enlarged power to confer desired benefits upon the student.

The university is properly a collection of graduate schools and a place for the pursuit of research. In this country the university includes one or more colleges for undergraduate work in preparation for graduate

*A report prepared for the National Association of Directors of Physical Education for College Women, by the Committee for the study of the Physical Education Requirement in Colleges and Universities.

The writer, as chairman of the committee, wishes to acknowledge her indebtedness to members of the National Association, to members of the committee, and especially to Professor Sarah R. Davis, University of California, Berkeley, who collaborated in writing the report.

study for its various degrees and certificates. The university may consider that its function is limited to classroom and laboratory instruction, and to the provision of facilities for research study, largely to be pursued independently by persons of sufficient maturity and experience to know what they want and how to proceed. It may wish to consider all its students, both graduate and undergraduate, as of the graduate level and to give them wide freedom in the selection of their programs and of courses within the college and school of their choice. This point of view is similar to that in European universities.

While the true purposes of a college or university are difficult to define with completeness, one of these purposes is recognized to be the training of scholars. Yet it is well known that large numbers of students who enter college as freshmen and sophomores do not enter with this purpose in view. Their object is rather preparation for a larger experience of life as citizens of the State. The college or university accepts the responsibility of giving these students an education which shall include training for living, for the duties of citizenship and of leadership.

Compulsory education of the youth of the nation between certain ages is accepted as necessary for all citizens. The privilege of higher education, formerly restricted to those persons destined for the learned professions, is becoming increasingly available to those who desire it and who show ability to undertake it. From these young people leadership in all that tends to improve the life of the nation is rightfully expected. To an increasing degree the graduates of institutions of higher education in this country are accepting the ideal of service as a proper expression of their attitude toward the social order. Service of a private or public nature, for remuneration or simply in the discharge of the proper obligations of citizenship, is the natural expectation of the college trained individual of today.

The national desire for speed and efficiency has made necessary the study and organization of every aspect of national life. The pressure for study and instruction in every phase of endeavor is bursting the bonds of academic limitations. In state universities, at least, we are fairly embarked upon an educational ocean with orders to prepare the passengers to deal intelligently and with specific skill, with almost any task that may later confront them.

The present response, in some institutions, notably those which are state and municipally supported, is to broaden admission requirements and to lessen restrictions within the curriculum. Whether college students in this country will be able to direct their own educational process as is the custom in Europe, may be doubted in view of the provisions found necessary here for "orienting" and advising them. But the facts definitely point to a decrease in requirements and to a broadening of academic opportunities within institutions of higher learning in the United States.

THE PURPOSE AND FUNCTION OF PHYSICAL EDUCATION IN THE COLLEGE CURRICULUM

Where and how does physical education appear in the shifting panorama of higher education?

Physical education is an essential part of each person's education. An individual is a unit in whom there are mental, social, and physical potentialities, none of which must be neglected if the result is to be a fully developed human being. Modern education recognizes the part which physical education must play in the development of appreciations, knowledge, and skills which make for enriched and complete living, and therefore for the greater contribution of the individual to the life of the state.

The passage of large numbers of students through the university is an introduction to, and a preparation for, this larger life of adult responsibility. To their happiness and success during these years and later, their health, vitality, and physical skills, together with their appreciation of related values, make no small contribution.

Although attendance at school is required of children between the ages of six and sixteen for five or six hours a day, nine or ten months in the year, the public schools have but recently and reluctantly assumed some responsibility for providing facilities for leadership of physical activity. Community pressure has brought about the establishment of playgrounds with supervision, sometimes as part of the school plant and often as a separate community enterprise, to ensure safety in the play activities now recognized as necessary for the adequate development of children.

The reasons for the necessity of organized physical education have been best set forth by Clark W. Hetherington. Physical education is an essential factor in the development of organic power and of neuromuscular skill. It provides controlled situations for experiences of emotional release and control.

Should the responsibility of adequate physical education which schools have rather generally been required to assume be accepted also by colleges and universities? In the private college for women it seems probable that opportunities for physical recreation, including competent instruction in games and other activities now included in the program of physical education, will continue to be offered and even required so long as the purposes and activities are approved by students and their parents.

The state or municipally supported institutions are becoming disturbed over the burden of expenses for staff, space, equipment, gymnasiums and field houses, and administrative costs of carrying a requirement. In coeducational institutions the problem is further complicated by the intercollegiate athletic programs for men, by military training and the R.O.T.C. The presence of two staffs of instructors, one for physical education and another responsible to student employers for the coaching of intercollegiate athletics, creates another set of problems. The problem

of physical education for women, comparatively simple in administration by itself, often suffers from its administrative association with the problems presented by the academic and extra-curricular organizations of men's physical education and athletics.

The focusing in one department, under one roof and one staff, of all the physical activities of women students, makes possible both unity and continuity in carrying out a program designed to meet not only their present but also their future needs. It makes possible the assembling of a staff of consistently high personal and professional qualifications. Such a staff may contribute greatly to the development of a fine spirit of responsiveness and of high morale among the women students on any campus.

It is the usual practice to have all physical education courses taught by regular members of the staff. The standards and quality of these courses are carried over in the more recreational forms of activities. These latter are organized under student management in the Women's Athletic Association. Frequently all coaching is given also by regular staff members. This ensures a continuity in policy and leadership that has made this large student activity a strong force toward sanity in sports participation. Such educational guidance of a university sports program should not be withheld, but should be accepted as a responsibility of the university administration.

The contributions which a department of physical education for women with a strongly sustained program can make may be briefly stated as follows:

1. *Health.*—Under the plan of a requirement in physical education there is opportunity for the protection of health to a rather remarkable degree, since all students who are enrolled in physical education are closely followed through their ability or inability to participate in activity. The department cooperates in every way with the health service and refers at once to the physician for women any student whose condition indicates the need of such service. Similarly, the physician may recommend a change in the student's physical education program to meet a specific need. The practice which was initiated in at least one university for all post-influenza cases illustrates the health protection which is possible. When a student returned to the campus following a case of influenza, she substituted for her physical education class for one week, an hour of rest daily, either at home or in the comfortable restroom of the gymnasium. At the end of this week she reported to the physician for women for an examination and was allowed to return to class only after being qualified by the physician. The values of such close supervision of student health during the first two years of college are apparent.

Life is growing more easy for young people physically but more difficult emotionally. In our present "push-the-button civilization," needs

in growth, development, and health must be met by consciously planned physical activity. Tensions of body and mind can be lessened through a good counterbalance of exercise. The physical education program, with its varied social situations, provides many opportunities for the detection of deviations from sound mental health and also for developing mental health in the individual.

2. *Vitality.*—Vitality is very closely associated with health. Regular participation in some form of adequate physical activity tends to increase the powers and adaptability of the body. The students of usual college age are not yet physically mature. Regular, moderate, and adequate physical activity tends to encourage the process of normal bodily development. A refreshed and vigorous body is apt to make its possessor more able to profit by instruction and more eager to seek the rich opportunities of university life, than is a body which is enfeebled through inactivity.

3. *Correct Body Mechanics.*—Instruction should be given to all students in the knowledge and skills necessary in order to stand, walk, and perform all the usual movements of daily life with ease, grace, and lack of strain.

4. *Education for Recreation.*—An individual will seek the opportunity to enjoy those forms of physical recreation in which he has already developed some degree of skill through a definite learning process. In other words, his abilities and inner resources for recreation are the direct result of his *education.*

Under an institutional requirement in physical education, swimming may be a *department* rather than a university requirement, thus avoiding larger administrative complications. Many students who are required to take swimming conquer almost immediately, under sympathetic leadership, a great fear of the water. Such an experience, with the ensuing joy in new power, has far reaching effects in contributing to the development of the personality. It is probable that, without a requirement, this natural fear would prevent large numbers of students from seeking voluntarily the opportunity to learn to swim.

Through classes in the dance, tennis, archery, basketball, field hockey, and other activities, students acquire those skills which will become wholesome recreational resources throughout life.

5. *Social Contacts.*—Many students have testified that the only friends they have made on a campus are those they met in the physical education class or on the sports field. In these situations the social possibilities are great. The importance of these opportunities to large numbers of commuters in a great metropolitan university and to those whose time is more than filled with activities of self-support, can hardly be exaggerated.

6. *The Development of Appreciations.*—Even a slight acquaintance with a subject tends to increase respect for excellence in its use or performance. The varied experiences provided in a well rounded program in physical education develop appreciation not only of skill in itself but of the qualities of character that drive one on toward excellence. Artistic accomplishment in many fields is appreciated more fully through rich and varied motor training. The experiences on gymnasium floor and sports field can be made an influence toward fine living in the development of a cooperative spirit and in the exercise of those courtesies which make an art of social contacts. The traits of sportsmanship here developed may make a definite contribution to the morale and "spirit" of the entire university. The quality of leadership is an important factor in determining these "overtones" of activity which are so important in the education of young women.

It is especially important that women develop an appreciation of educational values not only for themselves but also that in the years to come they may the more wisely direct the growth and education of children. Young women in the later years of adolescence find little more interest than do children in "their own good." But within a very few years after college a chief and absorbing interest for many of them will be the protection, welfare, and best education of their own children, and, with a developed social viewpoint, the children of the entire community. It is a responsibility of the university that their influence as mothers and leaders in civic affairs shall be an *educated* influence in all fundamental departments of life and thought. Young women who are experiencing the present carefully considered program of physical education will insist that their children receive an adequate *physical* education. *This development of attitude as preparation for future responsibility in the guidance of educational policies of the state* is one of our main objectives—an objective which could not be achieved with any effectiveness unless enrollment in physical education through at least two years was practically universal in the student group.

THE ADVANTAGES OF A REQUIREMENT IN ACHIEVING THE DESIRED ENDS

The values of physical education which have been described are widely acknowledged by expert as well as by lay opinion. Does the college or university wish to leave the matter as to whether these values shall be secured to individual students simply to whim and chance, to immature judgment arrived at on a basis of inadequate knowledge of scientific facts? Every college or university in the country requires that the student engage in a program of *intellectual* education. Is it not simply logical and right to require also *physical* education? A wide variety of choices is available to the individual in pursuing his "intellectual" education. So also is there opportunity for wide election among the many activities

in achieving one's "physical" education. A college cannot require one while leaving the other to chance without failing in this respect in its responsibilities to those with whose education it is charged.

That point of view in educational philosophy which holds that college students should assume all responsibility for planning their programs of study takes for granted a maturity of students which the facts belie. The college entrance age has been steadily lowered. Where a few years ago students entered college at eighteen years of age, an increasing number are now entering at seventeen, sixteen, and even fifteen years of age. Such young people have neither the scientific knowledge of human needs to be served by education nor long enough experience of life to plan their entire educational program with wisdom. If the necessary guidance in the form of certain requirements is withheld, they may well accuse us later of having failed them at a crucial time in the development of their powers.

On any campus the number of interests is so great and the claims upon the time and attention so many and so pressing that even though students believe that physical education courses are of value to them, the facts show that women students, at least, do not enroll in such courses in nearly as large numbers as under a requirement.

It must be recognized that a requirement is probably even more essential for women students than for men at present, if physical education is to appear on the individual's program. Men have always had a tradition that it is "the thing to do" to participate regularly in vigorous exercise and manly sport. It is now "the thing to do," it is true, for young women not only to be interested, intelligent, and appreciative of the skillful performances of men in sports, but also to participate rather widely themselves. Consider for how brief a period of years such accomplishments of women have been socially approved! It will take some time to build up the desirable attitudes toward these matters but we believe that very definite progress toward this end has been made within the past few years. And there can be no doubt that the practically universal college requirement in physical education has been one powerful factor in this changed attitude. Is this influence to be withdrawn at this very premature time? Eventually, perhaps, we may expect women of college age to realize, as men do in much larger numbers, that regular systematic activity is absolutely necessary for their highest degree of vitality and welfare. At that time it would be reasonable to raise the question as to the propriety of a *requirement* in physical education.

Another factor which would lead us to expect women to enroll in fewer numbers than men under a wholly elective program is the time involved in a young woman's maintaining her accustomed appearance and grooming. This is no "frivolous factor" but a very real problem in the situation under present conventions of make-up, hair dressing, and appearance. Repairing the dishevelment caused by a swim, a game of

tennis, and a shower is certainly time consuming and sometimes an actual money cost as well.

Many students enter a university as lacking in fundamental motor training and its applications as they are in the knowledge of English. For these a requirement would seem to be the effective way of overcoming a deficiency. Most students are still physically undeveloped and immature and require regular activity as an aid in completing normal growth. The pressure of studies would cause many a student to forego activity known to be needed and enjoyed.

The psychological disadvantage of a requirement in creating an attitude of resistance is largely eliminated by increasing both the number of activities offered and the freedom of election among these activities. The irritations consequent upon the crowded schedules for entering examinations and enrollment are but an extension of those encountered at registration by all students. The objectors make themselves heard out of all proportion to their grievances, while the great majority who realize that they are satisfying some need, make no comment. Once out of college all begin to realize what these opportunities meant.

Regularity in attendance is necessary for progress in all subjects, physical education no less than mathematics or languages. Where there is much to be given in short periods of instruction, material must be carefully organized and logically presented. If attendance were entirely voluntary, this orderly progressive continuity of instruction would break down and result in dissatisfaction to both instructor and students.

A large enrollment in the physical education program brings about conditions which enhance greatly the value of that program. Only with large numbers of students can we justify maintaining a staff of specialists in all the major activities. Only with a large-scale program can activities be offered at enough different hours really to serve the needs of students. Shrinking the program in either of these respects would seriously affect its quality as a university program.

The state and municipally supported institutions have conformed to the custom, begun by the private colleges and schools, of making provision for physical education and recreation even to the point of making it a requirement for the degree. Meanwhile physical education has entirely changed its procedures and greatly enlarged its scope. It now requires not only gymnasia but dance studios, corrective rooms, swimming pools, and extensive fields. The existing facilities and equipment for physical education in most colleges represent a very large investment in money. Are the returns on this investment to be greatly reduced by cutting down the number of persons using the facilities just when the yield should be high?

Much time and space are now devoted to the individual sports of tennis, archery, golf, swimming, and horseback riding, where formerly basketball, field hockey, and baseball seemed to satisfy the needs and

desires of the students. Among the reasons for the changed demand are:

1. The emphasis on team games in the secondary schools.
2. The provision by municipalities for tennis, golf, and swimming.
3. The increased need, socially, for skill in these activities.
4. The increased leisure which makes participation possible for both men and women in increasing numbers.
5. The largely accepted view that suitable physical recreation is a necessity for the maintenance of physical fitness of adults engaged in sedentary occupations.

It is true that many students enter college with a definite preconceived dislike of physical education due to some unfortunate experiences in their past. With steady improvement of the quality of teaching and with a more adequate program in the elementary and secondary schools (developments toward which the university through its preparation of teachers makes no small contribution), the attitude tends to change from dislike to appreciation. But in the cases of those students who do actively dislike physical education upon entrance, it seems that many change their attitude entirely during their varied experiences of the program during the years of requirement. If all opportunity of the department to reach these students were removed (for they are the very ones who would never elect physical education voluntarily in the beginning), there would be a serious set-back in that development of attitude which has been fostered during recent years. This attitude is just as essential an objective as are knowledge and skills. A requirement would seem the only means of really acquainting students with certain activities which will become to them a source of development, joy, and satisfaction.

The enrollment in any department of a university might be expected to suffer considerable loss were adequate credit and coercion in some form (e.g., requirements for the junior or other certificate, for the degree, prerequisites to advance courses, etc.) to be withdrawn. This marked decrease of enrollment which would probably result from relinquishing the requirement would undoubtedly be a measure of economy, but would be at the expense of real human values.

One may recognize fully the psychological disadvantages of a requirement and wish that it were possible to secure the health and developmental results of physical education without one. When preparatory schools shall send students to college adequately equipped with recreational skills and sufficiently mature in mind and body to carry on these interests with intelligence and discretion, the responsibility of the college for the health and protection of students and for wise direction of physical education and recreation will be much lessened. When that time comes we may perhaps look forward to the relinquishment of the requirement, but *at this time* it would seem a serious step backward in educational policy.

In this time of upheaval throughout the world, it is the time, if ever, to steer a steady course, to see issues clearly, and to avoid casting over-

board in a sudden hysteria those educational requirements which yield enduring values. During a time of immediate distress, thoughtful educators should be planning for a greater future. The plan should be ready when conditions make possible the new developments. Far from discovering less need for competently taught physical education the need here and now is evident for a development and strengthening of the program, and for ensuring its values to college students through a reasonable requirement plus an elective program with adequate credit.

A SUMMARY OF ARGUMENTS IN FAVOR OF A COLLEGE REQUIREMENT IN PHYSICAL EDUCATION FOR WOMEN

Physical education is an essential part of any person's education and must be ensured to the individual through a requirement.

Regular physical activity is necessary as one contributing factor to that health and physical fitness which are needed for successful pursuit of exacting studies.

Skills must be secured through education, for use during the years of maturity for recreation and maintenance of health.

The great majority of college students are too immature to plan their courses of study with entire wisdom. Certain minimum essentials should be required.

Requirements are happily accepted without question by the great majority of students according to their own wide testimony. The resistance of the few can be largely overcome by skillful teaching and by wide power of election.

The socializing situations of the physical education program are of value in many ways, including development of personality and of character.

The naturally lazy or sedentary students need the program even more than those who flock voluntarily to it.

Under an elective plan, those who need physical education least are the ones who elect it most readily, and those who need it most are just the ones who are not likely to take it.

The student who is self-supporting or carries other special burdens is just the one who needs the release and recreation that can come through an activity adapted to her individual needs. Fatigue can be lessened rather than increased if the activity be adapted to the individual.

Only with a large enrollment can the best program be offered—i.e., a program that includes a wide variety of activities given in elementary, intermediate, and advanced grades, each offered at various hours. The larger the staff (within certain limits) the greater is the possibility of having experts to teach the different activities.

The pressing demands on students' time tend to crowd out physical education if not required.

Under an elective plan many would elect only within a narrow field

of activity according to preconceived likes or dislikes, instead of securing that versatile and all-round development of skills which is fostered by a requirement.

It is a part of our conception of an educated person that he should command physical poise, control his movement with grace and ease, be able to save himself from death by drowning, and that he should possess one or more recreational skills in physical activity.

Physical education in college supplements a lack of training in the public schools.

One result of a "higher" education should be an appreciation aesthetically of the properties of motion of the human being as manifested in sports and in the dance as a fine art.

It is a responsibility of an institution of higher education to equip all its students with knowledge of the function and rewards of physical activity at all age periods in order that they may insist upon wise provision for the physical and social development of the children and young people in their communities.

A SUMMARY OF ARGUMENTS AGAINST A COLLEGE REQUIREMENT IN PHYSICAL EDUCATION FOR WOMEN

Higher education should be concerned only with intellectual attainment.

College students should be free to plan their own programs without the burden of requirements. A university should be a place of *opportunity* and should entirely avoid a paternalistic attitude.

Compulsions cause resistance in the student's mind. Only if he participates in an activity on his own volition will he secure the values therein.

Students who wish to take physical education object to the presence of any students who "crab." They want no one around "who spoils the fun."

The maintenance of a requirement involves considerable expense in the central offices of the college.

Administrative officers often find a requirement a source of irritation and burden in their dealing with the cases of individual students. Again, they say that often "the record of an honor student is spoiled by a 'C' grade in physical education."

A requirement gives the department concerned an increased "protection" and security. Other departments, which must depend only on the excellence of their offerings to attract students, may feel that a department is favored by having a requirement.

There is danger of too much regimentation of students, resulting in less careful attention to their individual needs and less respect for them as individual personalities.

Some students take adequate physical activity at their homes, clubs, or otherwise away from the college campus. They should not be required to engage also in the college program.

A requirement works injustice to those students who already have superior skill in several sports.

Some students walk long distances in their regular daily routine. They "get enough exercise" without attending a physical education class.

Students who are wholly or partially self-supporting find such a requirement a burden or an additional source of fatigue.

SOME SUGGESTED MEASURES OF PROCEDURE FOR MEETING A LOCAL ISSUE

1. Procure ruling from attorney-general of the state in states where there is a law of compulsory physical education.

2. Make personal visits to members of the administration, of the board of regents (if appropriate in the local situation), to key members of the faculty such as chairmen of the more important committees. Conference and presentation of compiled material.

3. Make personal presentation of matter at committee and faculty meetings.

4. Secure the active and aggressive assistance of strong faculty members of other departments. Make them feel that the concern is ***theirs***—that it is ***their*** responsibility that the right decision shall be made. A chairman of the physical education department may be suspected of self-interest for her department. She should avoid a belligerent attitude at all times.

5. Send special letters to key people in the profession and in educational or allied fields asking them to make statements regarding the values of physical education, recognition of the specific department's achievements, their views on a requirement.

6. At each effective opportunity present points in educational philosophy, and any statistics available which bear on the matter.

7. Present a description of conditions in other institutions.

8. Explain your department program: its educational procedures; its health procedures; course syllabi.

9. Offer department statistics which indicate the worth of the program: e.g., figures of abilities of students upon entrance (indicate lack of adequate training in high schools); figures in health improvement; figures in skills acquired.

10. Present figures showing cost per student in physical education, including salaries as well as maintenance budgets. Chart cost per student per activity, within the department, for your own information.

11. Comparison of cost of physical education for women with costs of other phases of education: men's athletics with high salaried coaches; women's athletics with its small expenses; other departments with large staffs of professorial rank in proportion to enrollment of students.

12. Demonstrate that most colleges and universities have, in fact, various requirements: for entrance, for the junior certificate, for the major. Mention some of these specifically in a few institutions.

13. Propose changes that might be considered in lieu of a requirement. Exemption tests for physical ability and health knowledge. A requirement only for those who do not pass the medical examinations or the physical ability tests.

14. Points to be kept in mind:

Retrenchments in expenditures can be brought about, if necessary, by decreasing the number of activities offered, enlarging the size of classes or playing groups (thus decreasing the size of staff), or possibly by shifting more of the expense of the recreational part of the program to the organized group of students, provided the activities are retained under the control of the president of the university through the director of the department. Any of these measures may represent a practical even though not a desirable compromise. That plan should be adopted which involves the least sacrifice of human values.

A victory that leaves bitterness and resentment among a large opposition may be a barren victory indeed and a victory of short duration.

An agitation which brings a department into the limelight may react to the benefit of that department and its concerns by spreading knowledge of its objectives, program, and worth. No matter what turn the agitation takes, confidence of the administration and faculty in the department should be retained and steadily increased by every development in the issue.

15. The matter of credit is a separate concern from that of the requirement. Credit indicates to students that the university gives support and sanction to the courses of the department. Physical education departments should be on no different basis from other academic departments in respect to credit.

APPENDIX

Abstracts of Student Opinion on the Requirement Secured from Various Questionnaire Studies

Student Arguments in Favor of a Requirement

Benefits to health and physical fitness.

It would not be taken if not required and it is so beneficial that students should not be permitted *not* to take it.

Recreational value.

Desirable acquisition of skills.

Social values, playing with others and making friends.

Students do not know enough now to take what they will later wish they had taken.

One learns to be a "good sport" through the physical education and sports program.

One will be at ease with more people one meets in after life because of wider common interests through knowledge of athletics and sports.

Relaxation from study.

Requirement relieves students from responsibility of decision in the matter. They have to make too many decisions anyway.

Student Arguments Against a Requirement

As stated in various college studies. (In every study it is to be noted that a decided minority voted against a requirement.)

A general dislike of requirements.
If no interest, no benefit possible.
Physical education uses up too much time.
It is too strenuous and too tiring.
It is better to spend time on studies than on physical activity.
Requiring it takes the joy out of it.
Makes scheduling of other courses more difficult.
Students get enough exercise walking to classes.
Students do not need exercise.
There is no lasting value in physical education.
Rush, dressing, and credit difficulties.
At college age students should choose courses, should not be required to do anything they do not want to do.

February, 1932. Twenty-seven Mid-West Colleges and Universities. (Compiled by Angela Kitzinger.)

Total—8,025 replies to the questionnaire.

	Freshmen	Sophomores	Juniors and Seniors
In favor of requirement, 78.9% (6,329).....	79.6%	75.8%	83%
Opposed to requirement, 19% (1,523).....	18.6%	21%	15.9%
Doubtful or no answer, 1.87% (72)			

December, 1932. University of Arizona.

Approximately 275 replies.
No question concerning the requirement itself
Ninety-seven per cent enjoyed the courses being taken
Ninety-one per cent made real progress in mastering the activities
Sixty-six per cent would like a longer period—one and a half hours, two times a week
Fifty-two per cent thought the present length of period hampered the learning process
Ninety-six per cent enjoyed personal contacts with other girls in sports activities
Ninety-two per cent might use skills learned after college
Ninety-seven per cent had a "good time" while playing the game.
Swimming, riding, tennis, and golf were most desired for after-college recreational purposes.

1932. Grinnell College, Iowa.

Eighty-five replies: Ninety-three per cent (or eighty) approved the requirement
Six per cent (or five) disapproved the requirement.

March, 1933. University of California, Berkeley.

(Requirement was still in effect. Students had no knowledge of the agitation for removing it.)
Total—1,550 replies
Ninety-seven per cent stated that they considered physical education was of value to them.
In favor of the requirement: 53 per cent
Opposed to requirement: 41 per cent
Undecided: 6 per cent
Sixty-five per cent stated that if physical education were not required they would elect it
Sixteen per cent stated that they would not elect
Seventeen per cent were doubtful because of lack of time due to working or commuting

Thirty-eight per cent stated that they had taken some activity here which they did not at first want to take but were glad afterwards that it had been required.

The universities listed below have reported student opinion in favor of a requirement as follows:

University of Oregon	89 per cent in favor of a requirement
University of Kansas	85 per cent in favor of a requirement
University of Colorado	79 per cent in favor of a requirement
University of Illinois	78 per cent in favor of a requirement
University of Texas	77 per cent in favor of a requirement
University of Indiana	68 per cent in favor of a requirement
University of Minnesota	68 per cent in favor of a requirement
University of Michigan	66 per cent in favor of a requirement
University of Wisconsin	60 per cent in favor of a requirement

The Education of Men Teachers of Physical Education for Public School Service in Selected Colleges and Universities

By W. E. Peik [1]
Professor of Education, University of Minnesota

and

G. B. Fitzgerald
Graduate Student in Physical Education, University of Minnesota

THE SURVEY

A THREE-YEAR survey of the education of teachers was recently concluded by the United States Office of Education with Dr. William Cooper, former U. S. Commissioner of Education, as director and with Dr. E. S. Evenden, Professor of Education, Teachers College, Columbia University, as associate director. The complete report will soon appear as a series of six volumes. One of these, Volume III, will deal more specifically with curriculum problems in the education of teachers of every type and is the work principally of one of the writers of this article and of Earle U. Rugg, to both of whom the general curriculum study was assigned.[2] Physical education was one of the fields that was intensively studied.

This article will bring together certain published and unpublished findings obtained from selected universities, colleges, and junior colleges in the field of physical education; those interested are directed to the complete reports which will be available from the Superintendent of Documents, Washington, D. C.

The analysis of curricula followed four main lines: First, a brief inquiry concerning general curriculum policies was sent to the presidents of all institutions which agreed to cooperate. About 300 presidents responded for the colleges, universities, and junior colleges. Second, an analysis of catalog statements of curriculum offerings and practices was made for 57 colleges and universities which had been carefully selected

[1] Dr. W. E. Peik was Principal Specialist in Curriculum Research covering universities, colleges, and junior colleges in the National Survey of the Education of Teachers. Dr. Earle U. Rugg of Colorado State Teachers College, in a similar capacity, covered the teachers colleges and normal schools.

[2] Additional data may be found in *Supplementary Report, Curricula for the Education of Teachers in Colleges and Universities*, by Dr. W. E. Peik and in *Supplementary Report, Curricula for the Education of Teachers in Teachers' Colleges and Normal Schools*, by Dr. Earle U. Rugg.

regionally and by states as probably representative of better practices as institutions of their type in the education of teachers. Third, to each instructor of those courses that were found to be most representative in catalog analysis, in the sense of being most frequently offered in curricula which prospective teachers followed, was sent: (1) a personnel schedule; (2) an inquiry form on the content and method of each course; and (3) a form asking for reactions to 63 curriculum issues of teacher education.[3] Fourth, an analysis was made of permanent record cards of 1,681 students in 24 major fields in 24 of the colleges and universities selected as most representative. Of these, 100 were those of men students majoring in physical education. It was found that even 50 cards were sufficient to establish the general pattern of practice.

Status of Specialized Curricula.—Of the fifty-seven institutions selected for intensive catalog study only twenty-seven, or 47 per cent, actually offered either specialized curricula or a complete major in physical education for men. Of these, twenty-one were universities and only six were colleges.

THE PATTERN OF PRESCRIBED WORK AND THE PATTERN OF WORK ACTUALLY TAKEN

The Major.—The entries of Table I present a comprehensive overview of the pattern of work prescribed by these colleges and universities for men majoring in physical education who are prospective teachers. For example, the median practice prescribed thirty-eight semester hours for the physical education major. The range of prescription extended, however, from only nineteen to as much as seventy-seven semester credits—certainly a wide variation of policy on the amount of specialization. Compared to other subjects this amount was among the highest. It was generally found that the majors in skill subjects like physical education, art, music, or agriculture had larger major prescriptions than did the academic fields. Academic major prescriptions averaged twenty-seven credits, while the special–subject major prescriptions averaged thirty-six credits, which is one-third greater. Physical education for men was exceeded only by agriculture and music.

There are probably two reasons for these larger majors: (1) little or no previous credit work is usually completed at the high school level as is done in other fields like English, history, mathematics, science, or languages; and (2) each of these fields requires the development of observable, practical, often highly specialized, skills.

The Minors.—Only 30 per cent of the institutions prescribed a second teaching subject as a first teaching minor. The median minor, where prescribed, consisted of seventeen semester credits. Eleven per cent required a second minor with a median of twelve credits. In view of the demands of public school situations as revealed, for example, by

[3] An analysis of reactions to these issues has appeared in the June, 1934 issue of the *Journal of Experimental Education*, p. 317–26.

Andreas,[4] Moore,[5] and Street,[6] and in view of the finding of the survey that over two-thirds of all teachers teach in two or more fields, physical education teachers should be prepared to teach in one or more teaching fields in addition to physical education because the small school is the typical school. It would appear that most colleges and universities were not making prescriptions to meet an actual situation. The case of physical education in public schools suffers when those specially trained in it can not teach in additional fields, particularly in the small schools where all teachers begin their careers. Superintendents often complain of the inability of special-subject teachers to augment their work; and it possibly is a reason for the failure to introduce physical education in many situations.

Although few institutions required minor fields there was a tendency for some students, through use of elective privileges, to acquire sufficient credits in science and social studies (not necessarily the right subjects) beyond requirements to qualify at least in some measure for teaching in these additional areas; but many did not. Column six of Table I reveals that many students took a median of twenty credits in science and a median of sixteen credits in social science when fifteen credits will satisfy the teaching requirements in the area of certain accrediting associations. A similar tendency, not so pronounced, was indicated in English. These concentrations, however, do not include teaching preparation in these academic fields.

Teaching Combinations.—The data of the survey showed that the four highest ranking teaching combinations with physical education for 2,012 health and physical education teachers (men and women) in senior high schools were in order: (1) social studies taught by 24 per cent; (2) biological sciences, taught by 16 per cent; (3) English, taught by 12 per cent; and (4) mathematics, taught by 8 per cent—a total of 60 per cent in these four fields. There was thus some general agreement in the order of frequency of the minor teaching subjects of the 2,012 teachers of health and physical education in the nation at large and the distribution of college credits as taken by 100 prospective teachers of physical education whose records were studied intensively.

The average number of high school teaching fields including the major, in which these 100 students took 15 or more semester hours was 2.2; there were many who had only 1.

Professional Courses in Education.—All these students who had prepared to teach were required to take work in general education. The

---

[4] Lewis Andreas, "Double-Major Programs in Teacher Training in Physical Education," RESEARCH QUARTERLY, IV: 1 (March, 1933), 78–90.

[5] H. E. Moore, "A Survey of the Subjects Taught by 1037 Teachers of Health and Physical Education in the Public Schools of Indiana," RESEARCH QUARTERLY, IV: 3 (October, 1933), 29–37.

[6] Claude Street, "A Study of the Suitable Majors and Minors That Are Used in Combination with Physical Education," RESEARCH QUARTERLY, IV: 3 (October, 1933), 38–50.

median number of semester credits was eighteen, the range of credits in education extended from only eight to as many as thirty. However, 7 per cent of the twenty-seven colleges and universities offering major curricula in physical education did not yet prescribe methods, observation, or student teaching, which were found to be the most highly rated education subjects in the opinion of both students and instructors. This is a serious deficiency where it is permitted.

The canvassed opinions of college instructors of all types indicated a strong belief in the desirability of observation, special methods, and practice teaching for teacher training. In answer to the more specific question, "How many credits ought to be required in student teaching?", 600 liberal arts college and university instructors gave a median group judgment of 8.7 semester credits. The opinions of about 700 teachers' college instructors were about the same. According to permanent record card analysis 84 per cent of the men graduates in physical education as such in colleges and universities had had student teaching. Student teaching, however, does not always mean actual practice teaching but may mean, unfortunately, in some colleges and universities, only observation or participation. Furthermore, some of the actual practice teaching is with college students and not with the secondary and elementary school pupils as intended by state prescriptions even if not specified. Thus, the acquisition of facts, skill, and insights is provided in all institutions but often no adequate attempt is made to initiate art and skill in teaching. The judgments of college and university instructors placed first emphasis on actual practice teaching among all education courses with related special methods occupying second place. The central tendency was to desire a practice teaching requirement greater than it is at present.

The courses in education most frequently taken in curricula prescribed for majors in physical education were:

Course	*Per Cent Taking*	*Range of Credits Taken*	*Mean of Credits Taken*
Student Teaching	84	2–12	5
Special Methods Course in Major	83	2–12	5
Special Methods Course outside Major	13	2– 5	2.6
Educational Psychology	78	2– 6	2.9
General Psychology	73	3–14	5.1
History of Education	64	2– 6	3.2
Health Education	60	1– 8	3.8
Physical Education Administration	44	2– 5	2.7
General Methods	36	2– 6	2.7
Tests and Measurements	29	2– 6	2.6
Secondary Education	28	2– 3	2.0

Numbers of miscellaneous titles taken by less than 25 per cent—30

TABLE I

THE PATTERN OF PRESCRIPTION IN TWENTY-SEVEN SELECTED COLLEGES AND UNIVERSITIES FOR MAJOR STUDENTS (MEN) PREPARING TO TEACH PHYSICAL EDUCATION AND THE WORK ACTUALLY TAKEN BY ONE HUNDRED PROSPECTIVE TEACHERS (MEN) MAJORING IN PHYSICAL EDUCATION IN A LIMITED NUMBER OF THE SAME INSTITUTIONS FROM WHICH PERMANENT RECORD CARDS WERE SELECTED AT RANDOM

	Catalog Analysis Work required by 27 institutions			*Permanent Record Card Analysis* Work taken by 100 students in a limited number of these institutions		
	Per cent requiring work	Range of semester credits required	Median semester credits required	Per cent taking work	Range of semester credits taken	Median semester credits taken
	(1)	(2)	(3)	(4)	(5)	(6)
Major—Physical Education	100	19–60	38	100	19–77	34
First Minor	30	12–20	17	...	.....	..
Second Minor	11	10–20	12	...	.....	..
English	96	6–18	10	99	5–35	13
Fine Arts	11	2–6	3	29	1–15	3
Foreign Languages	52	6–16	11	64	3–24	9
Mathematics	15	5–6	6	33	1–21	8
Philosophy	11	3–12	6	15	2–5	3
Psychology (General)	67	3–6	3	73	3–14	5
Religion	4	3	3	18	2–13	4
Science	100	6–33	17	100	5–55	20
Social Science	78	2–15	6	98	3–53	16
Total Academic Work, Including Music and Art	100	30–70	47	100	37–97	69
Special Subjects Other than Physical Education (Manual Training, Agriculture, Commercial Work, etc.)	36	1–8	3	30	1–70	4
All Education	100	9–30	18	100	8–46	19
Special Methods, Observations, and Student Teaching only	93	2–24	6	86	2–15	7
TOTAL	100	116–142	122	100	112–169	125

A notable lack in the education of men physical education teachers was in the field of elementary education, where the physical education director properly oriented in the purpose of elementary education, hygiene, plays and games, curriculum and supervision, etc., could render valuable service in most public schools. One of the writers found that 50 per cent of the men physical education teachers he investigated were required to teach or supervise in the elementary school.[7] Of these men, less than one-half had preservice preparation which included practice teaching in the elementary school and but one-fourth had such preparation in health education for elementary schools. Only one-third received any other type of training in elementary school education. It would appear that their preparation did not fit these men to meet the demands of their actual school positions in this regard. It is time that many prospective physical education teachers supplement their interest in athletics, major sports, and also physical education for the secondary school level with an interest, activity, and development in the entire program of health and physical education at all levels of the public school.

Other Elements of the Curriculum Pattern.—In order of the percentage of physical education students taking work (column five, Table I), the fields of knowledge ranked as follows: physical education, sciences, and education, 100 per cent; English, 99 per cent; all social studies, 98 per cent; psychology, 73 per cent; a foreign language, 64 per cent; mathematics, 33 per cent; fine arts, 29 per cent; religion, 18 per cent; and philosophy, 15 per cent.

The median number of credits of academic subjects taken was 69 of the 126 semester credits required for graduation, a total which was about two-thirds of that taken by academic majors, because the physical education major itself is usually classified as a special subject.

It is doubtful in the minds of the writers whether a general education comparable to that of other teachers, adequate skill and orientation in physical education and health, a second teaching field, work in elementary school physical education and health, and the prescribed state requirements in education can all be met in less than five years. In fact this is true of all teaching fields in the skill subjects. Some institutions were making a beginning with a five-year integrated program.

Interrelationship of Specialization and General Education.—Any teacher in the public schools should be a broadly and truly educated individual. This aspect of a teacher's preparation emphasizes general education, that is, contacts with the major fields of knowledge. Physical education teachers as well as all other teachers should meet this criterion for the teaching profession. A teacher should also have mastered his fields of specialization. These two objectives are to be properly

[7] G. B. Fitzgerald, The Preservice Training Needs of Men Teachers of Physical Education In Minnesota, M.A. Thesis, University of Minnesota.

balanced and are often brought in conflict with each other. The effect of high specialization and of little specialization in physical education upon the total pattern of work is indicated in Figure 1 which makes a comparison of the pattern of college work actually completed by one man of the 100 studied who took 77 hours in physical education and certain closely related subjects and another who took only 18.5. The latter has contacted more than 4 more general fields and in 4 of the 4 fields contacted by both has earned more credits than the former. He can also qualify to teach in 2 fields besides physical education, namely, mathematics and science. Had the student with a major of 77 credits not taken a total of 142 semester credits, 15 more than the average completed, his general education would have suffered even more with that amount of specialization.

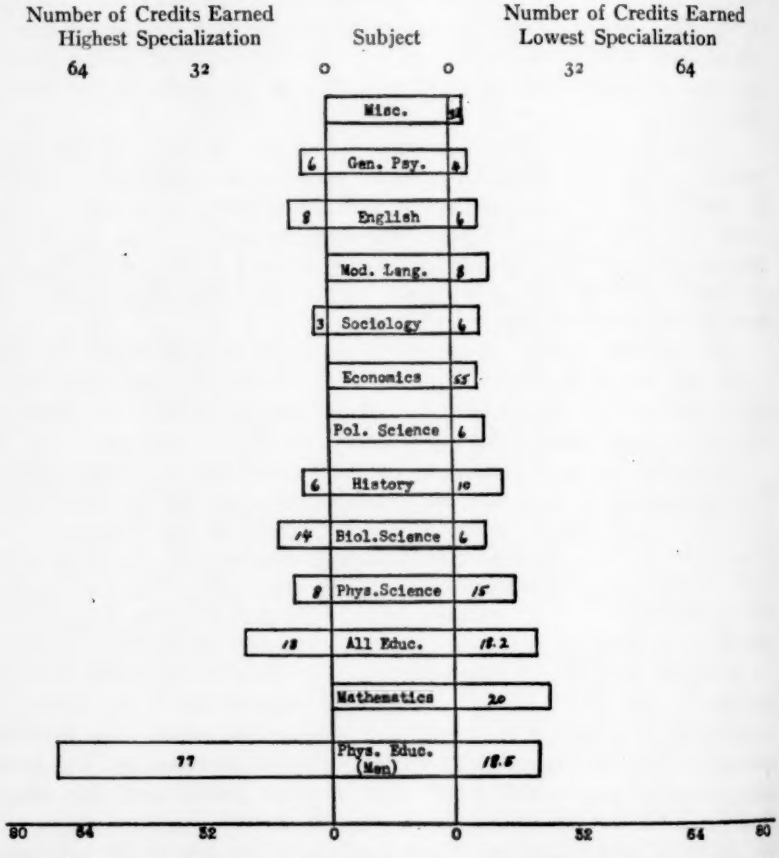


FIG. 1.—A Comparison of the Pattern of Work Completed by the Two Men with B.A. Degrees in Physical Education Who Had the Least (18.5) and Most (77) Number of Semester Credits in Their Major, Respectively.

No doubt seventy-seven credits in physical education represents over-specialization for the undergraduate who must also complete a general education for teaching and eighteen credits represents under-specialization for most all students; but as a group there is much evidence in the records in physical education that the specialization tendency is very strong and that the general education tendency is weak in comparison with other fields. In fact physical education majors stood at the bottom of all teaching fields studied in the range and depth of their general academic training. Is it not time that this matter receive careful attention of those who are responsible? Should these men as a group go out as teachers, and suffer by comparison in their general education and scholarship?

The Most Prescribed Courses in Physical Education.—Table II presents the most frequently prescribed courses in physical education in twenty-six institutions. Outside of the general physical education courses required of all students, often without credit, examination and diagnosis, and methods and coaching are the only two courses required for the major by over 75 per cent of the institutions. Six additional

TABLE II

COURSES IN PHYSICAL EDUCATION MOST OFTEN PRESCRIBED BY TWENTY-SIX INSTITUTIONS FOR A MAJOR IN PHYSICAL EDUCATION FOR MEN

Courses Prescribed	Per Cent of Institutions Prescribing
General Physical Education	100*
Examination and Diagnosis	89
Physical Education Methods and Coaching	77
Physical Education Administration	73
Physical Education Theory	69
Leadership (Playgrounds, Community Centers, and Boy Scouts)	65
Physiology or Anatomy or Both	62
Health or Hygiene or Both	58
First Aid	50
Gymnastics	42
Track	39
Football	35
Baseball	30
Basketball	30
Swimming	30
Plays and Games	12
Programs and Recitals	12
Wrestling	12

* Included in the actual physical education prescription in 58 per cent of the institutions.

courses were prescribed by 50 per cent or more of them; they were: the administration of physical education; theory courses in physical education; leadership courses on playground, community centers or boy scouts; physiology and anatomy; health and hygiene; and first aid. Less than half prescribed gymnastics. Major sports under such special titles

as football, baseball, and basketball were prescribed by less than one-third of the institutions but were no doubt often included under more general titles.

Chaos in Titles.—Course titles in physical education are not at all standardized and course descriptions indicate a variety of content for courses with similar titles. It seems that some concerted action to systematize course terminology is needed and that the elements of training generally needed for the job be required of all unless excused for proved competency. There is evidence of enough variation in content and requirements to justify the use of the word "chaotic" to describe it. Even though complete standardization be undesirable, it would appear reasonable that the fundamental courses be better defined.

Elective Privilege.—The use made of elective privileges by one hundred prospective men teachers of physical education is recorded in Table III. The students whose permanent record cards were analyzed

TABLE III

THE APPROXIMATE USE MADE OF ELECTIVE PRIVILEGES BY ONE HUNDRED PROSPECTIVE TEACHERS OF PHYSICAL EDUCATION (MEN) GRADUATING FROM COLLEGES AND UNIVERSITIES*

Field in Which Elective Privilege Was Used to Increase Work	Per Cent of Total Elective Privilege Used in Field	*Rank Order of Emphasis*	
		By Students in Physical Education	By Students of All Fields Studied
(1)	(2)	(3)	(4)
Social Studies	19.1	1	1
Science	16.7	3	2
English	13.6	2	3
The Major	12.7	13	4
Fine Arts	6.1	9	5
Mathematics	5.5	4	6
All Education	5.4	7	7
Foreign Language	5.1	11	8
Psychology	4.6	5	9
Special Methods, Observation or Student Teaching	4.6	10	10
Special Subjects	3.9	6	11
Religion	1.4	8	12
Philosophy	1.3	12	13

* Based on the increase of median credits taken by one hundred students in twenty-four institutions over the median prescription of institutions.

used 19 per cent of their total election rights to increase work in the social studies. Physical education students placed a larger percentage of elective credit in this field than did any other group. English ranked second; science, third; and mathematics, fourth. When a comparison was made of the use made of elective privileges by students in all other fields it was found that social studies, science, and English ranked also among the first three subjects. Using the electives to increase the major, a procedure which ranked fourth for all students, ranked only thir-

teenth for the physical education group. This trend is perhaps due to the general tendency of physical education departments to prescribe most all courses in the major and to require a larger major in the first place.

SUMMARY

1. Many colleges and fewer universities do not offer specialized curricula or complete majors for men physical education teachers. The median major for men in physical education consisted of thirty-eight semester hours. The range of prescription, however, extended widely from only nineteen to as much as seventy-seven semester credits.

2. Only 30 per cent of the institutions prescribed and controlled preparation in a second or third teaching field although most teachers teach in more than one field and the typical position demands it.

3. Through the use of electives most students actually completed enough credits in other fields to qualify for teaching in them. But the courses may not be the best selections, many students escaped this preparation because definite requirements were not made, and special preparation to teach academic subjects was made by a very small number.

4. The most frequent teaching combinations with physical education (2,012 men and women) were social studies, biological sciences, English, and mathematics. These 4 fields covered 60 per cent of all teaching combinations.

5. The general academic training of men in physical education was not as extensive and the specialization in their major was greater than was the training of prospective teachers in academic subjects.

6. The most common professional courses completed in education were student teaching, special methods in physical education, educational psychology preceded by general psychology, history of education, and health education. The elementary school field in relation to health and physical education was neglected.

7. On the basis of college preparation men graduates were probably best qualified to teach, in addition to physical education, the sciences and English, if per cent taking and number of credits taken be a valid criterion.

8. An analysis of permanent record cards showed that high specialization is usually done at the expense of the breadth and depth of general education.

9. The courses in physical education prescribed in more than 50 per cent of the major sequences were outside of general physical education prescribed to all students: examination and diagnosis; methods and coaching; the administration of physical education; theory of physical education; leadership courses in playground, community centers, and boy scouts; health and hygiene; and first aid. Somewhat less than one-half prescribed gymnastics.

10. The title and content of courses in physical education were very unstandardized.

11. Elective privileges were used largely in social studies, English, science, and mathematics, and less often than in other fields to take more work in the major.

RECOMMENDATIONS

1. Prescribe a teaching minor in combination with the physical education major. Prevent over- or under-specialization in the major.

2. Require an adequate amount of practice teaching of all in situations typical of public school work, preferably both at the secondary and elementary school levels.

3. Pay more attention to the implications and methods of health and physical education at all levels of the public school, with less neglect of the elementary school.

4. Provide a general education more comparable to that required of all teachers. All teachers should have a broad general education, no group should be excepted.

5. Develop, as soon as possible, five-year integrated curricula for prospective teachers of physical education to complete adequate general education, specialization in physical education, a second teaching field, thorough orientation in education and psychology, and training at the elementary school level as a background to teaching.

6. Secure greater standardization in the course title terminology and course content of the most common courses and relate some of these, for prospective teachers, to the professional requirements of the teacher's job.

Report of Committee on Objectives and Policies

*Prepared by the Public School Section of the American Physical Education Association**

COMMITTEE MEMBERS

Charles W. Davis, Board of Education, Berkeley, California
Horace G. Geisel, Board of Education, Harrisburg, Pennsylvania
Alfreda Mosscrop, Alabama College, Montevallo, Alabama
Louise Martin, State Teachers College, Warrensburg, Missouri (*resigned*)
David K. Brace, University of Texas, Austin, Texas
Ruth Evans, Board of Education, Springfield, Massachusetts
W. W. H. Mustaine, State Education Department, Albany, New York, *Chairman*

INTRODUCTION

THE COMMITTEE has interpreted its problem in terms of the responsibility of the physical education administrator and teacher —the adult professional leadership.

"Aim" and "objectives," as such, do not exist separately. Together they denote *direction* of any intended, purposeful activity—including professional activity of administrators and teachers. Undirected activity is irrational and inefficient. "Aim and objectives" connote discrimination and control of activity, and objectives should not be confused with mere fortuitous "outcomes."

Objectives are of many kinds and exist in many interrelated levels or hierarchies. An objective attained in a lower level should contribute to objectives in the higher levels. Those in the higher categories provide criteria for judging those in the lower orders.

It seems desirable that physical education objectives be at least broadly classified for study and constructive discussion. Any basis of classification that is useful is warranted. The committee has adopted a simple, general classification of objectives as related to (I) the educational *aim*, (II) the educational *means*, and (III) the *educand*, or pupil *himself*. On this basis the report is organized as follows:

I. *Educational Objectives*
II. *Objectives in Ways and Means*
III. (*a*) *Activity Objectives*, and
(*b*) *Pupils' Objectives*

* The general plan of this report was outlined at the American Physical Education Association Convention at Louisville in 1933 and the final report was presented at the Public School Section of the National Convention at Cleveland, April 21, 1934.

Educational Objectives are in the field of *actual changes effected in the personality and life of the individual child.* Often referred to as "remote objectives," the Committee stresses them as "ever present objectives," since they must function in the "here and now."

Objectives and Policies in Ways and Means are in the field of *conditions* and *instrumentalities* of physical education which are needed for achievement of Educational Objectives.

Activity Objectives denote the immediate object of the pupil-activity —stunt, game, etc. (e. g., to tag "It," to make a goal), which are closely related to specific activity standards and to *"Pupils' Objectives"*—chiefly satisfactions of immediate interests. These objectives are considered throughout this report but are not further discussed as separate categories.

I. EDUCATIONAL OBJECTIVES

Individual personality is regarded as an indivisible unit, acting and reacting as an integrated whole. Educational objectives are likewise closely interrelated and are not susceptible of organization into mutually exclusive categories. Since personality usually functions better in some respects than in others, however, and develops differently under different conditions, and since physical education programs may be adjusted to emphasize certain educational outcomes more than others, educational objectives are considered under the following commonly recognized, functional aspects of personality:

A. Physical Fitness
B. Mental Health and Efficiency
C. Social-Moral Character
D. Emotional Expression and Control
E. Appreciations

These categories indicate certain generic differences in our objectives but need to be clarified for practical use, as follows:

Objectives of physical education:

A. For Physical Fitness

Knowledge, skills, and attitudes *re*

1. *Normal growth and development.*

2. *Organic vigor and efficiency;* fitness of the vital organs to maintain the functions of circulation, respiration, digestion, elimination, nutrition, and heat regulation, and to adapt effectively and economically to the varied demands made upon them.

3. *Neuromuscular efficiency,* including physical alertness, agility, speed, accuracy and facility of movement (motor skills), rhythmic activity, optimum muscular strength and endurance.

4. *Vitality and control of the nervous system* for vigorous action and for prompt relaxation and rest.

5. *Body postures and mechanics* that are efficient for the activity at hand and favorable to health.

6. *Knowledge of one's own health requirements,* and ability to adjust personal health practices to meet the demands of unusual situations.

7. *Absence of defects* causing drains on physiological resources.

8. *Objectives under other categories,* contribute to physical fitness.

Objectives of physical education:

B. For Mental Health and Efficiency

Knowledge, skills, and attitudes *re*

1. *Power to think and will* body movements.

2. *Quick perception and power to analyze* a situation and see its essential elements.

3. *Power to discriminate and weigh evidence* bearing upon alternative courses of action; straight thinking; sound and rapid judgment and decision; problem solving. *Orderliness* in thinking and acting, and ability to organize.

4. *Mental alertness. Power of sustained attention* and concentration of thought.

5. *Broad, wholesome interests and skills* in physical activities and related recreational pursuits. Curiosity.

6. *Comparison and evaluation of results;* sane attitudes toward "winning" and "losing"; recognition of the true function of recreative sports.

7. *Sense of rhythm.*

8. *Wholesome mental attitudes;* mental "stance" and integrity. *Habits* of recognizing, weighing, and *facing facts* squarely.

9. *Knowledge of one's own powers* and limitations.

10. *Knowledge of a variety of healthful activities,* rules of games, health practices, qualifications for leadership, etc.

11. *Objectives under other categories* contribute to mental health and efficiency.

Objectives of physical education:

C. For Social-Moral Character

Knowledge, skills, and attitudes *re*

1. *Sympathy;* due consideration of, and respect for, the rights (including property rights), abilities, feelings, opinions, experience, limitations, and responsibilities of others. *Unselfishness;* helpfulness to others.

2. *Courtesy;* good manners and speech; conformity to wholesome social customs; promptness.

3. *Honesty;* truthfulness; sincerity (earnestness).

4. *Sense of justice;* "fair play"; treat all as we would be treated; democracy.

5. *Active cooperation* with others toward a common goal for the satisfaction and welfare of the group.

6. *Sane attitudes toward sex* and the social obligations of the two sexes.

7. *Wholesome aggressiveness;* disciplined ambition.

8. *Self-discipline;* control of personal and social conduct.

9. *Reliability*; trustworthiness; sense of honor and of duty.

10. *Respect for rules* and properly constituted authority; obedience to law; respect for sound principles.

11. *Perseverance* toward worth-while goals of achievement; not easily discouraged; "stick-to-it-ive-ness"; industry.

12. *Self-direction* and self-reliance; ability to see, accept, and meet social *responsibility.*

13. *Effective and wholehearted leadership or followership* according to the demands of the situation.

14. *Loyalty to principles* which one believes to be right; unprejudiced; loyalty to wholesome groups of which one is a member.

15. *Disciplined initiative* and the "courage of one's convictions."

16. *A friendly play spirit.* Companionability.

17. *A proper sense of self-respect,* but absence of conceit or self-importance; due confidence in self and others.

18. *A pleasing personal appearance. Hygienic practices* as a social obligation.

19. *Objectives under other categories* contribute to social-moral character.

Objectives of physical education:

D. For Emotional Expression and Control

Emotion is the moving force, the drive that impels toward activity. A proper emotional tone facilitates learning (growth). Emotional reactions are considered as conditional as well as unconditional responses of total personality. They are very closely interrelated with:

	Illustration
Physical fitness	Effect on digestion; close association with glandular and muscular activity.
Mental health and efficiency	Effect on mental outlook, attitudes and habits of thinking; may lead to exalted or depressed "moods."
Social-moral character	Effect on social relations and on the development of social traits like courtesy, sympathy, sense of justice, etc.
Appreciations	Effect on esthetic standards, such as beauty (as in rhythmical expression), good taste, enthusiasm, joy, and cultural pursuits.

Physical education situations should contribute to the development of knowledge, skills, and attitudes *re*

1. *Sane standards for the experience of satisfactions;* disciplined ambition in relation to successful performance; proper ratio between "winning" and "losing," etc.

2. *Facility of feeling and expressing pleasure,* happiness, kindness, courage, enthusiasm, cheerfulness, love of companionship, fairness, and other traits suggested in preceding categories; skill in dramatization of beneficial emotions.

3. *Mental poise*; self-control ("keep your head!"); patience.

4. *Avoidance of emotional strains,* such as worry, fear, overtension. Control of excitement; control of reactions to unpleasant, unavoidable circumstances ("the enjoyment of unpleasant places").

5. *The emotional experience of relaxation;* "resting points of satisfaction" and "periods for constructive composure."

6. *The impersonal or objective attitude* toward situations likely to disturb emotional balance. Control of egoistic tendencies.

7. *Redirection of impulses* to anger, pugnacity, jealousy, into constructive channels. Substitution of constructive intellectual reactions for unconditioned ("out-of-the-clear-blue-sky") motor tendencies. Deliberation; postponement of reaction until validated by reason and harmonized with one's own social-moral standards.

8. *Wholesome standards of "likes" and "dislikes."*

9. *Objectives under other categories* contribute to wholesome emotional expression and control.

Objectives of physical education:

E. For Appreciations†

Knowledge, skills, and attitudes *re*

1. *Rhythm and music* (sympathetic interpretation and expression, forms of rhythms, national moods and ideals, relaxation, harmony, etc.).

2. *Nature* (fields, streams, woods, skies, fresh air; forms, colors, and activities of nature; man's place in nature; etc.).

3. *Personality* (cheerfulness, poise, manners, companionship, etc.)

4. *Freedom* (respect for law, emotional expression and control, joy, etc.).

5. *Physical laws* (reaction of physical forces, gravity, momentum, etc.).

6. *Enjoyment* (of effort, accomplishment, creative and imitative activities, etc.).

7. *Value of making correct choices* (discrimination, taste, judgment, etc.).

8. *Bodily vigor* (fullness of bodily powers, fitness, etc.).

9. *Objectives under other categories* contribute to appreciations.

† From report of New York State Syllabus Committee.

II. SUGGESTED OBJECTIVES IN WAYS AND MEANS

PROBLEMS OF ORGANIZATION, ADMINISTRATIVE PROVISIONS, AND GENERAL POLICIES

"The pitcher shapes the wheel."—Robert Browning.

A. The General Educational Leadership

1. Interpret physical education not as special school subject, but as a *general method of education* which contributes toward *all* categories of educational objectives listed in this report, and *counteract any tendencies to limit or weaken its broad function* by giving it a narrower interpretation or responsibility.

2. Secure the *legislative enactments* and *administrative regulations* needed to guarantee to all children of school age their rights to physical education under favorable conditions.

3. Secure a reasonably adequate *financial support* for physical education.

B. The Physical Education Administrator

Public Support.—

4. *Educate the public* to an appreciation and support of physical education as an effective means of education and thus as an important social agency—parent-teachers meetings, service clubs, newspapers, etc.

5. Provide *publicity* which stresses specific educational results and participation in activities by large numbers of pupils. Make physical education serve every pupil and keep this fact before the public.

6. Present occasional well-organized *public demonstrations* of physical education in a way to secure appreciation by the public.

7. Devise means of *extending the ideals,* functions, and leadership of physical education into the extra-scholastic life of the pupils.

Measuring, Classifying, and Reporting.—

8. See that every child has the benefit of a *medical and physical examination* of educational significance, once a year.

9. Physical educators should have ready *access to all official health examination records* of the children in their classes.

10. Provide systematic plans for *discovering the individual physical education needs* of pupils and for differentiating their programs accordingly.

11. *Classify pupils* according to their *individual needs, capacities,* and *interests,* using *objective tests* as far as possible.

12. *Use suitable objective tests* and measurements as an aid in *measuring progress* toward objectives.

13. Develop and maintain for practical use a simple system of *professional records* which have *educational* significance.

14. Develop and use a simple form of "*report*" which will indicate to child and parents something *significant* and *interesting* about the

child's progress. This should be a part of the school's regular system of reports.

Curriculum.—

15. *Provide a program* which not only meets the minimum requirements of the state, but which is *expanded* and *enriched* as fully as the opportunities offered by the local situation make possible.

16. Base the program upon *carefully selected objectives of value in life.*

17. Provide *corrective physical education* for pupils who need it. All corrective programs should be closely supervised by the physical educator and under the direction of physicians in cases requiring it.

18. Prepare a *clear statement* (*outline, syllabus*) of your physical education program, including the objectives to be emphasized, the type of organization to be provided, and the activities and general methods to be used.

19. *Interschool athletics* should be considered a definite part of the physical education program and conform with sound principles of education.

20. All *athletic coaches* should be members of the physical education staff.

21. Do not permit highly organized *athletic competition in elementary schools,* or interschool competition between junior high schools in *different* cities.

22. Conform strictly to official regulations for administration and control of *athletic finances.*

Teacher.—

23. Provide an amount of *physical education leadership* which is adequate in relation to the number, sex, and special needs of pupils.

24. *Select teachers* who have desirable personal qualifications, good professional background, and who will work for the *true educational values* of physical education.

25. Make an analysis of the work to be done, and carefully *consider the training, experience, interests,* and *probable efficiency of staff members* before assigning their specific duties.

26. Provide enough *supervision* to improve methods.

27. The physical education of high school boys and high school girls should be directed by *teachers of their own sex.*

28. The physical education *teacher-load* should not be more than five clock-hours a day of active teaching. "*After-school*" *activities should be considered.*

29. Provide effective policies and plans to *maintain the health, social efficiency, and enthusiastic spirit of the teachers.*

30. Provide opportunities and encouragement for the constant *professional growth of teachers* in service.

31. Keep all members of the staff informed on the *legal liability* of

school boards, administrators, and teachers in case of physical injuries sustained by pupils while using department facilities or engaging in activity programs.

Adjustments.—

32. Emphasize the importance of *proper organization* (pupils and program) in relation to the specific educational results to be attained.

33. Emphasize the *methods and policies which are most essential* to secure the educational outcomes for which each activity is used.

34. Set for attainment such *standards* of knowledge, attitudes, and skills as will promote the achievement of the *educational objectives.*

35. Give special attention to the *educational organization and administration* of physical education in junior high school grades; apply modern theory.

Cooperation.—

36. Maintain *cooperative relations* as a member of the teaching profession, with all teachers and school officials.

37. See that all department activities *conform to established school procedure.*

38. *Correlate* physical education with other school and community programs.

39. Develop an effective plan for *systematic cooperation by all school health specialists* in discovering the causes of low physical fitness of individual pupils and in providing them with the individual health programs they need.

40. Cooperate with the *health authorities* in taking every needed precaution for the prevention and control of communicable diseases.

Hygiene.—

41. See that the *school building and grounds,* particularly the physical education plant, are kept in *sanitary, attractive condition.*

42. Give attention to all phases of *school hygiene,* including the *hygiene of instruction*—lighting, ventilation, furniture, drinking fountains, the print of books, pupil load, hours of instruction, etc.

43. See that *instruction in the important facts of hygiene* is given at appropriate times in connection with the activity program. "Catch the interests at their crests."

C. The Activity Program

44. Provide *interesting* activities that will best *meet the specific needs* of the group with which you are dealing.

45. *Select activities critically* according to their value for achieving the educational objectives.

46. Use *only* activities that are *not likely to cause physical (or social) injury,* that is, they should be reasonably safe.

47. Include *large-muscle activities* which pupils will use in *leisure time* and *later life.*

48. Know and *emphasize the inherent elements* in the activities used that make them educationally valuable.

49. Provide a *wide variety of activities,* including mimetics, rhythms and dances, games, calisthenics, athletics, self-testing stunts, marching tactics, dual combat, apparatus gymnastics, swimming, miscellaneous.

50. Include exercises which develop *efficient neuromuscular coordination.*

51. Include exercises which *adequately stimulate the vital organs* and permit of *rest periods* when needed.

52. Emphasize interschool *play days of a social and recreative nature* for high school girls. Do not sponsor strenuous interschool athletic competition for girls.

53. Provide extensive programs of *intramural recreative games and sports* for "after-school" periods, *including* "minor" forms of activities —dancing clubs, lawn games, tumbling teams, gymnastics teams, hiking groups, etc.

54. Physical education should be a part of the school program *throughout the school year* and be required in *all* elementary and secondary school grades.

D. The Time and Space

55. Secure *official allotment of adequate time,* at *hours favorable* to objectives in physical fitness, and in periods *sufficiently frequent* for *cumulative* results. A minimum of *one hour a day* is a fair standard under present conditions.

56. *Differentiate the time plan* according to the needs of individual pupils.

57. The time plan of physical education classes should follow in general the rule of *frequent, comparatively short periods in the lower grades,* changing gradually by age-grade levels to *less frequent, longer periods in the upper grades and high school.*

58. Physical education periods for *vigorous activity should not be scheduled within one hour after meals* and preferably *not within thirty minutes before meals.* If impossible to observe this rule strictly, programs should be *modified* accordingly.

59. Provide attractive *outdoor playgrounds,* ample in number and size for activities suitable to the children who use them. Areas for small children should be separate and protected. High school boys and girls should have separate or divided areas for outdoor games and sports.

60. Provide sufficient well-ventilated *indoor space,* or sheltered *open-air gymnasia* if suitable to climate, for the size of the school and for a sound educational organization of the activity program to meet the individual needs of pupils.

61. Provide the best possible *surface and drainage* for outdoor play areas, so that they can be used safely within a reasonable time after rain.

62. *Make the best possible* use of the time and space available, including the natural resources of the community and its environs.

63. *Give equal consideration to boys and girls* in the allotment of time and space for after-school activities.

E. The Equipment

64. Provide *indoor and outdoor apparatus* for the activity program *which can be used* helpfully and specifically in achieving the educational objectives.

65. The *equipment should be adequate* in relation to the number of pupils, the type of activities needed, and the type of class organization most educationally desirable.

66. Provide only equipment that is *reasonably safe,* and with consideration of the supervision available.

67. Provide for frequent, systematic *inspection of all facilities* to reveal possible accident hazards and for prompt repairs when needed—condition of apparatus, floors and playground surfaces, hazardous obstructions, etc.

68. Give attention to the proper *care and protection of equipment.*

69. See that *supplies for play and games* are adequate to the number of pupils, and keep supplies in proper repair and usable condition.

70. Have a *clear understanding* with the school authorities regarding the *use of* equipment by children *when unsupervised.*

71. Provide the *scientific apparatus and supplies* needed for physical examinations and physical education tests and measurements, and a well-equipped *first-aid cabinet.*

72. See that each school is provided with a useful collection *of books and other literature* on physical education.

73. *Make the best possible use* of the equipment and supplies available.

F. Other Teaching Adjustments

74. Set up teaching situations that are *natural, desirable, real-life situations* for the general program.

75. Provide situations which stimulate wholesome *self-expression,* and emphasize pupil *self-direction* and individual *responsibility.*

76. *Adapt activities* to the available time, space, equipment, and teaching staff as efficiently as possible.

77. *Adjust situations to varying conditions,* such as climatic conditions, class moods, approaching holidays, outside attractions.

78. *Make attractive* the activity program *most needed by pupils* and urge participation by all, except for valid reason.

79. Provide a *wide variety of social situations* which will *induce* the exercise of the social-moral traits to be developed.

80. Give ample *opportunities* for the exercise of pupil *initiative* and *resourcefulness;* let them work out their ideas as far as possible.

81. Provide situations which give both direct and incidental opportunities favorable to the *development of appreciations.*

82. Establish the policy of *equalizing the powers of competing teams or individuals* in competitive games and sports.

83. Adapt situations and set up standards so that *reasonable effort* on the part of a child may bring the *experience of success.*

84. *Eliminate disciplinary problems* by providing interesting programs, proper class organization and management, and helpful pupil-teacher relationships.

85. Boys and girls *may be scheduled together* in the *elementary school,* although segregation of sexes is desirable in the fifth and sixth grades if practicable. Boys and girls *should be scheduled separately* in the *junior and senior high school grades.*

G. The Immediate Leadership (The Teacher)

86. *Emphasize particular objectives* to meet the *special needs* of particular groups of pupils or the *special problems* of an entire school.

87. Set up for attainment such *standards of knowledge, skills, and attitudes* as promote progress toward *educational objectives.*

88. *Know why* a particular activity and method of teaching are being used.

89. *Allow children a voice* in the selection of activities, but do not consider pupil interests as the only guide. *Broaden and direct the growth of pupil interests.*

90. Provide ample *opportunities for retrials,* correction of mistakes, and repeated practice for the formation of right habits.

91. Utilize the *opportunities occasioned by pupil failures* or disappointments to teach pupils to face facts squarely, to analyze causes of failure; and inculcate habits and attitudes of perseverance, of "keeping a stout heart" in adversity, etc.

92. *Make the program progressive* and stimulate progression in achievement.

93. *Every lesson period should be carefully planned* for definite progress toward objectives, but the activity program and methods should be flexible.

94. *Encourage the exercise* of the traits, powers, and appreciations which physical education should aid in developing.

95. Emphasize *courtesy, good manners,* and *sportsmanship* in all activities.

96. Promote *cooperative attitudes,* interest in group achievement, and assist the child in finding his place as a member of the social group.

97. Preserve the *natural play spirit* in children; promote the spirit of *friendliness* and *comradeship.* Bring about an "atmosphere" that will make pupil *companionship as playmates* an enjoyable experience, without overexcitement.

98. Apply *sound educational psychology* in specific teaching methods.

99. Provide ways of *preventing children from feeling stigmatized* if placed in a corrective class.

100. *See to it that competitive situations are fair* to all.

101. Devise ways to *help children understand* the need for periodic medical and physical examinations and develop a proper attitude toward such health inventories.

102. Devise ways of influencing the *twenty-four-hour-day health behavior* of the children.

103. Instruct pupils in *safety rules* and train them to practice habits of safety, without causing timidity or fear.

104. Devise means of *using every minute of class time* most effectively —quick method of recording absences, squad or team organization, space ready for use, etc.

105. Maintain high standards of *janitor service* and of *health and social deportment of pupils* in locker rooms, gymnasiums, and adjacent hallways.

106. *Cooperate* in carrying out *school and community projects.*

107. Make your *supervision of the classroom teacher's work* helpful, purposeful, and unobtrusive.

108. Teachers should follow a *systematic plan for maintaining their own health and social efficiency*—avoid overfatigue, utilize opportunities for recreation, conserve nervous energy, get proper food and sleep, etc.

SOME OBJECTIVES AND POLICIES SUGGESTED FOR EMPHASIS AT PARTICULAR AGE-GRADE LEVELS

KINDERGARTEN

For Physical Fitness:
- Sense development
- Normal physical growth
- Much activity of large muscles—climbing, etc.
- Happiness and joy in activity
- Control of fundamental movements of the body
- Adequate periods for real relaxation and rest
- Removal of all remediable defects

For Mental Health and Efficiency:
- Happy school atmosphere
- Interest in normal play
- Self-expression through spontaneous activity
- Direct self-expression into worthy channels
- Opportunity to exercise curiosity
- Opportunity to solve simple play situations
- Answer simple questions clearly
- Orientate children in essential adjustments of group life

For Social-Moral Character:
- Ability to play happily with others
- Courtesy and unselfishness
- Share equipment with other children
- Respect the property rights of others
- Small responsibilities in the way of housekeeping
- Respect the authority of the teacher; cheerful response
- Counteract anti-social tendencies

For Emotional Expression and Control:
- Be happily occupied
- Control temper; get along without tantrums
- Satisfy curiosity; overcome timidity
- Control of desire to occupy the limelight
- Avoid overexcitement
- Sympathetic, affectionate attitudes

For Appreciations:
- Enjoyment of fresh air and freedom
- Enjoyment of companionship with playmates
- Enjoyment of play, and of rhythm
- "Turn about is fair play"
- Get the essential meaning of ownership rights
- Love of pets
- Appreciate the action of certain physical forces—gravity, etc.

PRIMARY GRADES

For Physical Fitness:
- Neuromuscular and organic development
- Muscular activity of great variety
- Active outdoor play without accumulated fatigue
- Adequate periods for relaxation and rest
- Simple large-muscle coordinations; control of fundamental movements
- At least *B* grade posture for this level
- Opportunity to learn to swim, and to skate
- Health practices

For Mental Health and Efficiency:
- Happy school atmosphere
- Activities of interest and within capacity for achievement
- Opportunities for exercise of memory
- Opportunities for imagination and imitation—dramatic plays
- Know the rules of simple games
- Follow simple directions accurately
- Develop attitudes of perseverance and mastery

For Social-Moral Character:
- Take turns willingly
- Be kind to smaller children
- Simple duties of leadership
- Learn to care for equipment
- Learn to share all belongings
- Develop standards of action through imitation
- Control self-assertiveness
- Honesty; truthfulness; self-reliance
- Obedience

For Emotional Expression and Control:
- Develop happiness and satisfaction in activity
- Creative motor expression
- Play without getting angry or jealous
- Play without screaming
- Control tendency to quarrel
- Control emotions when hurt
- Proper balance between success and failure
- Overcome inhibitions
- Cooperative obedience without resentment
- Avoid causing fear

For Appreciations:
- Enjoy being clean, and being in a clean, attractive environment
- Love of nature—outdoor life, grass, trees, etc.
- Appreciate simple musical rhythms
- Joy in creative activities
- See the need for safety
- Recognize the principle that for freedom of action, one must observe the rights of others
- Approve good playing by others

ELEMENTARY GRADES

For Physical Fitness:
- Establish attitudes favoring physical activity
- Ability to play a game of playground-ball without overfatigue
- Progress in skills—coordinations involving accessory muscles
- Rhythmic activity
- Maintain good postures and develop good body mechanics
- Absence of remediable health defects
- Motivate health habits

For Mental Health and Efficiency:
- Wholesome attitude toward work and play
- Enjoyment of simple game skills
- Alertness to changes in game situations
- Understand the reasons for things done
- Know the first aid for cuts, burns, and bruises
- Sense of rhythm
- Ability to measure self by others on same age-grade level
- Right thinking with reference to social relationships
- Know that exercise promotes growth and strength
- Develop powers of discrimination

For Social-Moral Character:
- Accept responsibilities; opportunities for elementary leadership
- Ability to act as leader of exercises or games
- Cooperation; follow a captain
- Ability to compete without rancor
- Play own position in a game
- Courtesy and consideration for others
- Sense of loyalty

Tolerance; truthfulness; sense of honor

For Emotional Expression and Control:

Attitudes of cheerfulness and confidence

Not to give way to temper; play without fighting

Avoid frequent feeling of being wronged

Avoid extremes of emotional expression—outbursts

Wholesome satisfactions of curiosity, adventure, and "gang" tendencies

Experiences that encourage further participation

Sense of humor

Direct egotistical tendencies into helpful physical channels

For Appreciations:

Advantages of being healthy; cleanliness of person, clothing, and surroundings

Enjoyment of vigorous activity, and of relaxation

Enjoyment of more advanced rhythmic activities

Appreciate correct performance; enjoy effort and achievement

Appreciate possibility of further growth and development

See the need for an umpire; the value of accepting his decisions

See the advantages of readiness to act —alertness

Note the action of physical forces—leverage, momentum, etc.

"The Golden Rule"

JUNIOR HIGH SCHOOL

For Physical Fitness:

Normal motor reactions

Attitudes, power, and ability to participate in sports

Ability to gauge one's own physical limits

Normal weight for type of build

Rhythm, agility, speed, and variety of skills

Proper food and adequate sleep

At least *B* grade posture, and efficient body mechanics

Special attention to individual needs

For Mental Health and Efficiency:

Normal interest in objective activities

Know essential rules of games

Know essential rules for keeping healthy

Insight into simple problems of activity situations

Development of more advanced skills

Sustain interest in activity

Ability to keep score or record test scores accurately

Ability to exercise judgment, make correct choices, etc.

Constructive pupil-teacher relationships

For Social-Moral Character:

Practice in more advanced responsibilities

Cooperate with teammates in games

Understand the meaning of teamwork

Put group welfare above selfish, individual desires

Wholesome ambition; good sportsmanship

Be democratic

See need for respecting authority

Control of sex problems

Direct anti-social tendencies into constructive channels

For Emotional Expression and Control:

Favorable environment

Wholesome physical outlets for nervous tension, and emotional expression

Stand getting roughly handled without getting angry or frightened

Stick to a difficult task or a losing game without giving up

Control tendency to "show off" too much or to be "withdrawn"

Give opportunities for growth of appreciations

Develop ability to face difficulties; face the facts

Recognize social standards of emotional reactions

Teacher should not antagonize; treat pupil "like a man," "like a woman"

Know the factors that affect emotions

For Appreciations:

Enjoy a bath and change of clothes after exercise

Enjoy camping out

Know the value of social adjustments; have wholesome loyalties
Appreciate the value of discrimination and evaluation
Appreciate good taste, and manners
Satisfactions in self-control
Meaning of sportsmanship
Healthful leisure-time activities
Understand the practical and esthetic values of physical skills

---

SENIOR HIGH SCHOOL

For Physical Fitness:
Bring to realization the values of recreative sports
Habit of keeping in "condition"
Expertness in a few chosen activity skills for enjoyable use after school days
Control of strains and drains on nervous vitality
Develop strength and endurance; grace and poise
Have normal strength index
Helpful mental, social, and emotional habits in relation to physical fitness
Personal health self-control; few if any colds, etc.
Good food habits and proper amount of sleep

For Mental Health and Efficiency:
Intelligent interest in activity to insure carry-over
Advanced game skills
Ability to analyze motor skills
Ability to use skills to interpret thoughts and ideas
Know the rules of all games played
Ability to solve problems arising in game situations
Think for one's self
Consider physical education as a part of the social heritage

For Social-Moral Character:
Fair play and sportsmanship
Friendly attitude toward students and athletes of opposing schools
Play without quarrelling with officials
Self-direction in relation to the changing social order
Take responsibility as a leader or follower
Use rivalry and competition in accordance with ideal social standards
Use building and all equipment carefully
Emphasize promptness in meeting social obligations
Organization and management of activities by pupils themselves

For Emotional Expression and Control:
Cultivate impersonal attitudes—intellectual reactions
Control feelings as spectator or participant in athletics
Be intelligent about one's "wants," "likes," etc.
Develop poise. Avoid "alibis."
Continue an activity despite minor bumps or scratches
Control of "drives," "crushes," etc.
Be keen to participate in activities
Relaxation — "constructive composure"

For Appreciations:
Skillfulness in personal health management
Enjoy having a strong, efficient, well-formed body
Responsibility for the health and safety of others, including the next generation
Appreciate the beauty of skillful performance
Bring out the fine ideals of health and social-moral character
Orderliness in thinking and acting; value of good judgment
Emotional control in relation to social adjustment
Self-discipline; knowledge of own capacities and limitations
Appreciate the meaning of responsibility, as leader or follower
Develop appreciation of healthful habits of exercise, bodily efficiency, and hygienic living

Flarimeter Tests of Circulatory Fitness

By PHILIP V. WELLS, D.Sc.

Biophysicist, Prudential Insurance Co. of America, Newark, N. J.

FUNCTIONAL tests become more difficult, the nearer the subject approaches to perfect health.* A crude test is sufficient to prove that a man is dead; the evidences of failing function abound in the advanced stages of disease; but to determine the condition of an athlete is not easy. For the human organism is so complicated, a dynamic equilibrium of so many varying factors, that the significance of small departures from the expected responses must always be questionable. In the first place, what is normal? How do we know what to expect? No two responses are ever exactly alike. The subject is changing continuously. Obviously, the normal is an ideal, a statistical concept, and a given departure from the normal may be healthy in one circumstance but unhealthy in another.

The Greeks realized the statistical nature of the normal when they adopted the *Doryphorus of Polyclitus* as the canon of the human form. The sculptor is supposed to have arrived at its proportions by averaging measurements of a large number of Olympian athletes. The great sculptors rebelled at this canon, but so impressed were many Roman emperors that they used it as a model for statues of themselves.

Physically, the champion defines an optimum. Indeed, as A. V. Hill[1] has said:

> "Some of the most consistent physiological data available are contained, not in books on physiology, not even in books on medicine, but in the world's records for running different horizontal distances. If one plots the average speed . . . . . against the length of the race . . . . ., a curve of almost perfect smoothness is obtained . . . . . The relation shown in the curve may be accepted practically as a natural constant for the human race; it would require almost a superhuman effort to change one of the points by 2 per cent."

In other words, such races constitute in themselves our best tests of physical fitness. It may be objected that, since each type of race requires its specific type of runner, no single race can measure physical fitness. The champion in one race does not score 100 per cent in every other. Then what is his score in physical fitness? This merely illustrates the complexity of the problem of functional tests. The result of a specific test must needs be specific, it cannot yield a general result. Indeed, one may ask just what is meant by "physical fitness." Is it perfect health?

---

* A paper presented before the Therapeutic Section at the American Physical Education Association Convention, April 19, 1934, at Cleveland, Ohio.

[1] A. V. Hill, *Muscular Activity*, p. 98, Herter Lectures, Johns Hopkins University, Baltimore: Williams & Wilkins, 1926.

The athlete in training is not necessarily the best risk in an epidemic. Nevertheless, I believe the physical educator is in a strategic position for the study of functional tests.

In short dashes the speed is a measure of muscular efficiency, and the circulation is hardly involved. Tait McKenzie[2] classes them as exercises of effort. Intermediate distances, however, do involve the circulation, being limited by breathlessness. The symptoms of breathlessness are all nervous. "The athlete suffers from a form of *respiratory madness*, with singing in the ears, dizziness, a sense of impending suffocation, mental anxiety, confusion, and even unconsciousness."[3] These sensations do not all originate from the heart. They must involve the whole respiratory and circulatory systems.

The phenomenon of *second wind* occurs in the long-distance races. A new level of oxygen intake is established, which improves the coronary circulation, and enables the heart muscle to increase its rate of work. The fact that second wind does not occur sooner, however, shows that the heart muscle is not the limiting factor in the breathlessness which limits the intermediate race. Circulatory fitness, therefore, is not merely another name for cardiac reserve, although "the deciding factor in the capacity of a man for severe prolonged exercise may often be the efficiency of his coronary circulation."[4] There is no simple way of measuring specifically the cardiac reserve. Functional tests must, perforce, measure the result of the coordination of the circulation as a whole.

To one disciplined in the patient experimental methods of the physical sciences, the inadequacy of many studies of functional tests of the circulation is most striking. There seems to be no realization of how sustained an attack is required to discover a real test of circulatory fitness, and to demonstrate its value. Enthusiasts rush in with cries of "Eureka," only to despair at the failure of their first attempts. One is reminded of Bacon's essay on "Dispatch," "stay a little, that we may make an end the sooner."

AMONG physical educators the most popular functional tests seem to be (1) the effect of exercise on heart rate, and (2) the responses of rate and blood pressure to change of posture. The fundamental physiology of the postural test was worked out by Erlanger and Hooker[5] in 1904. It was developed by McCurdy,[6] Crampton,[7] Sewall,[8] Schneider,[9] and Addis.[10] Essentially, it is merely a method of measuring the effect

[2] R. Tait McKenzie, *Exercise in Education and Medicine*, Chap. 1, 3rd ed., Philadelphia: W. B. Saunders Co., 1924.
[3] *Ibid.*, p. 36.
[4] A. V. Hill, *op. cit.*, p. 108.
[5] Erlanger and Hooker, *Johns Hopkins Reports*, 12 (1904), 145.
[6] J. H. McCurdy, *Am. Phys. Educ. Rev.*, 15 (1910), 421–32.
[7] C. W. Crampton, *Am. J. Med. Sci.*, 158 (1919), 786–816.
[8] H. Sewall, *Am. J. Med. Sci.*, 158 (1919), 786–816.
[9] E. C. Schneider, *J. Am. Med. Assn.*, 74 (1920), 1507.
[10] T. Addis, *Arch. Int. Med.*, 30 (1922), 240–68; 29 (1922), 539–553.

of impeding venous return to the right heart, due to the sudden hydrostatic pressure thrown upon the cistern of Keith in the abdomen when the subject rises from the horizontal to the vertical position. The blood in the abdominal veins must then be raised against gravity to the level of the heart. Until the necessary abdominal squeeze occurs, the venous return to the heart is delayed, which produces a drop in systolic pressure, while the diastolic rises and the heart accelerates in the attempt to compensate for the systolic collapse. This corresponds exactly to the Valsalva reaction, but is much less pronounced.

Nearly two centuries ago, Valsalva noticed that the pulse became weak when he attempted to expire forcibly with the glottis closed, after full inspiration. Physiologists have long known that the reason for this is the increase in intrathoracic pressure, which interferes with the venous return of blood to the heart. We have standardized this effect in the flarimeter,[11] which enables one to blow at a fixed pressure of twenty mm. of mercury through a small orifice at the rate of thirty-six cc. per second. The median drop in systolic pressure in tests on eighty-eight normal adult males was twenty-six mm., and the pressure had recovered its original value seventeen seconds after the beginning of the blow.

Now let us compare this result with the best work on the postural test which we have seen, that of Addis. On 310 normals, he obtained in the first 15 seconds, after changing from the horizontal to the vertical posture, an average drop in systolic pressure of 4 mm. with a probable error of single tests of 25 mm. The trouble with the postural test is that the effect is so small that it is within the probable error of a single test. This applies not only to the systolic drop, but to the rise in pulse rate as well.

IN THE flarimeter blow the initial systolic drop averages more than six times as large as that of the postural test. In fact, the pulse pressure is often reduced practically to zero, so that no sound is heard in the stethoscope. If there is any virtue in such responses, the flarimeter drop should have a much larger chance of success. But we consider this initial response so unreliable that we do not include it in the routine.

Instead of the initial systolic drop, we take "T_o," the number of seconds required for the systolic to recover its original level, after the blow begins. If T_o is delayed beyond thirty-five seconds, it indicates a sluggish abdominal tone. The probable error of a single determination of T_o is six seconds, less than one-eighteenth of the percentage error of the systolic drop in the postural test.

The chief defect in T_o is its susceptibility to emotion. Indeed, for

11 L. F. MacKenzie, P. V. Wells, E. G. Dewis, and L. S. Ylvisaker, *Proc. Ass'n. Life Insurance Medical Directors of Am.*, 16 (1929), 36–113; 17 (1930), 8–25; 18 (1931), 239–249.

Am. J. Med. Sci., 180 (1930), 372–386; 182 (1931), 497–513.

L. F. MacKenzie and P. V. Wells, *Proc. Ass. Life Ins. Med. Dir.*, 19 (1932), 89–136.

this reason we pay no attention to values of T_o less than fifteen seconds. To measure circulatory irritability we use two other constants, namely, "T_{20}" and "$T_m - S_{plus}$." T_{20} is the time in seconds for the systolic to rise twenty mm. above its initial value, while $(T_m - S_{plus})$ is the total rise in systolic corrected for the total length of the blow (T_m). If the total rise (in mm.) is greater than the length of blow (in seconds), it indicates excessive irritability somewhere in the circulation, and the same is shown by values of T_{20} less than twenty-five seconds, for adult males.

The maximum length of blow, T_m, indicates shortness of breath when less than 40 seconds. The three quantities T_m, T_{20}, and $(T_m - S_{plus})$, are practically independent of age, among adult males. Thus, among 746 first class risks, tested by 70 selected examiners, T_m averaged 57 seconds at age 20 and 54 seconds at age 40. T_{20} decreased less than 3 seconds, and $(T_m - S_{plus})$ less than 4, from ages 20 to 40 years. All this is very fortunate, for it means that no tables will be needed for the interpretation of these indices of irritability and shortness of breath. Single borders will suffice for ages above 20 years. T_m, T_{20} and $(T_m - S_{plus})$, therefore, are physiological constants, such as are the temperature and pH of the blood. They represent fundamental attributes of circulatory fitness.

There is a practical advantage in following the systolic pressure during the flarimeter blow, quite apart from its use as a circulatory index. It enables the examiner to estimate the performance. This is most useful in the final blow, begun two and a half minutes after the standard step exercise. If the final blow is shorter than those before exercise by more than ten seconds, but the systolic rises higher, it proves that the circulation has not cleaned up the oxygen debt. On the other hand, if the systolic does not rise as high as in the longer blows before exercise, one can discount the short blow as perfunctory performance. The systolic rise checks the length of blow still better when irritability is combined with shortness of breath; for the subject cannot plead that he could have blown longer. This would merely accentuate the irritability. We cannot be sure which is the limiting factor, but we can be sure that one of them, at least, is abnormal.

The standard technique has been very carefully designed to accomplish three results: (1) to give the subject sufficient practice at each stage to perfect his performance, (2) to provide a time schedule so that the variables are exactly defined, and (3) to enable the examiner to check every measurement by sufficient repetition. We believe these points to be necessary for reliable results. The time schedule for the standard technique should take less than seventeen minutes, which means skill if the examiner is to observe and record twenty-eight different readings accurately.

Under favorable conditions the standard technique can be abbreviated by omitting Tests III and IV, leaving Tests I, II, and V only. This "Short Test" takes nine minutes, for fifteen readings, and if these

are satisfactory it is safe to pass the subject without further ado. When the subject is slow at performance, however, it is easier for him to follow the standard technique, if he has never done the test before. In repeated tests over a period of time, the short test is sufficient. Indeed, the vital capacity (Test II) can also be omitted except for an occasional check-up, for it does not vary appreciably under normal circumstances.

In addition to the vital capacity, which is already familiar, the flarimeter provides standard measures of three fundamental attributes of circulatory function: (1) shortness of breath, (2) irritability, and (3) abdominal venous tone. By combining this simple instrument with Master's standard step exercise, we can determine more completely the circulatory response to exercise. We have spared no effort to perfect the technique. After an extended practical experience, both in the Home Office and with examiners in the field, we can think of no further improvements, and so we offer the test to this Association in the hope that it may be useful to you in your work.

OF COURSE, you will ask us the meaning of the four findings, T_0, T_{20}, T_m, and (T_m—S_{plus}). Frankly, we do not know exactly how to interpret them ourselves. Only time will tell. The circulation may be too complicated to yield important information to such simple tests. They may even mislead, at times. They may not be worth the effort required to measure them, little as it is. They have revealed to us no startling discoveries. On occasion, an applicant with no other impairment has shown irritability in the flarimeter test and has died soon after with the verdict of heart disease, but such cases may be mere coincidences. The value of pulse rate and blood pressure determinations in medical selection is already well established, and yet the mortality from circulatory diseases remains a problem in life insurance.

But counsels of despair lead to no advances in science. If we are ever to arrive at a functional test of the circulation, it must be along some such lines as the flarimeter test. The X-ray and the electrocardiograph are not yet generally available in the field, and even they may not tell the whole story.

Some critics believe that a functional test of the circulation is an impossibility, because of emotional disturbances. But the nervous coordination of the circulation is itself one of the important factors which a functional test must measure. Every flarimeter finding is a function of the nervous system. If they were not, I would despair of their usefulness from the start. It is just because of this relation that I believe they will yield important information. Of course, this does not simplify their interpretation, far from it; but I, for one, cannot avoid the suspicion that shortness of breath, irritability, and poor abdominal venous tone are actual impairments of circulatory function, even when they occur in athletes.

The Attitudes of High School Girls Toward Physical Activities

By THERESA W. ANDERSON
North High School, Des Moines, Iowa

IN THE past there has not been enough attention paid to the attitudes and interests of high school girls toward their physical activities.* The reason for this is that there were very little available data regarding these attitudes and interests. A review of the literature shows that studies have been made by Vernon Lapp and Erna Driftmier. This is a study of the attitudes and interests of high school girls with relation to certain physical activities—both those which are based on the nature of the activity itself and also those based on past experiences, teaching ability, and other related factors.

METHOD

In order to secure this information the questionnaire method was chosen. The questionnaire was prepared as a result of interviews with three groups of girls. The first group consisted of girls who were superior physical education students from the standpoint of interest, ability, and achievement. The second group was average. The third group was inferior. The bases used for the selection of the three groups were: first, McCloy's Motor Ability Tests; second, results of achievement tests used in regular class work; third, evidence of interest as determined by the amount of intramural and outside participation in physical activities by the girls. On the basis of scores, ten from the superior group were selected, ten from the average, and ten from the inferior group.

A separate interview was held with each girl. All were students of the investigator, and a definite condition of rapport existed. Evidence of the fact that the investigator had their confidence and that they were not afraid to express themselves was shown by members of the inferior group who, even though they were in classes of the investigator, felt no hesitancy in speaking about any dislike of the present program. In the preparation of the questionnaire the investigator used the material which discriminated most between the groups.

After this preparatory study, 800 questionnaires† were given to girls of grades 10, 11, 12 in three public high schools of Des Moines, Iowa, a city of 140,000. The girls have had a program of physical education throughout their school careers. The questionnaire was filled out in the

* A paper presented before the Research Section at the Central District Physical Education Association Convention, April, 1934, at St. Paul, Minnesota.

† A copy of the questionnaire as it was used is submitted in the appendix.

presence of the investigator herself who gave the same explanation to each group. There was considerable variation in the types of programs the girls had had, depending upon the elementary and junior high school attended.

An Analysis of Activity Preferences

These girls were asked to place a check in the column which corresponded to their feeling toward the activity.

	Like very much		Like some, not much		Indifferent		Dislike		Do not know it		I should like specific coaching in this		Total Number Checking
		%		%		%		%		%		%	
Fall—													
1. Archery	160	21	181	24	107	14	61	9	246	32	189	25	755
2. Canoeing	371	52	109	15	53	7	10	2	171	24	248	33	714
3. Deck Tennis	206	27	221	26	128	17	97	13	135	17	84	33	769
4. Diving	263	38	112	16	70	11	80	11	167	24	308	40	692
5. Field Ball	209	27	151	20	123	16	102	13	190	24	22	3	775
6. Fundamental Exercise (feet and abdominal)	70	10	163	21	141	18	366	47	29	4	34	5	769
7. Golf	286	40	118	17	76	17	34	9	194	27	345	46	708
8. Hiking	539	68	173	22	42	5	18	3	10	2	39	5	782
9. Horseback Riding	488	66	79	10	32	4	13	3	125	17	313	41	737
10. Life Saving	203	28	120	16	100	13	73	10	23	3	226	31	729
11. Marching	65	8	160	20	170	21	375	48	13	3	8	1	783
12. Natural Dancing	199	25	168	21	113	14	288	37	13	3	94	12	782
13. Soccer	204	26	243	31	120	15	153	20	62	8	12	1	782
14. Squad Practice on Skills	70	9	197	26	165	22	257	34	63	9	42	6	752
15. Swimming	561	74	79	13	25	3	48	6	29	4	360	50	760
16. Tennis	553	77	91	13	16	2	9	1	54	7	377	50	723
Winter—													
17. Apparatus	174	25	153	22	96	13	150	21	135	19	19	2	708
18. Basketball	577	74	138	18	27	3	28	3	14	2	72	10	784
19. Bowling	76	10	98	13	100	13	74	10	406	54	100	13	754
20. Calisthenics	42	5	77	11	80	11	271	37	278	37	13	1	760
21. Clogging	296	38	194	25	108	14	123	16	48	7	82	11	769
22. Deck Tennis	237	31	216	28	100	12	90	12	130	17			773
23. Diving	253	35	116	17	68	10	84	12	181	26			702
24. Folk Dancing	89	12	212	27	127	16	328	42	22	3	17	2	778
25. Fundamental Exercise (feet and abdominal)	62	8	140	18	149	19	371	50	34	5			756
26. Ice Hockey	198	27	94	12	62	8	39	5	350	48	140	20	743
27. Life Saving	189	26	118	16	91	13	73	10	246	35			717
28. Marching	61	7	170	22	161	21	370	48	14	2			776
29. Natural Dancing	201	26	152	20	107	14	268	37	22	3			750
30. Skating	536	72	70	9	27	31	17	2	98	14	183	25	748
31. Skiing	289	40	87	13	52	7	20	2	270	38	173	23	718
32. Squad Practice on Skills	62	9	165	21	164	21	289	40	67	9			747
33. Stunts	204	26	218	29	132	17	197	26	22	2	36	4	737
34. Swimming	533	70	103	13	36	5	50	7	35	5			758
35. Tobogganing	362	48	65	9	42	6	24	3	253	34	104	14	746
36. Tumbling	180	24	195	26	107	14	233	30	46	5	30	4	761
37. Volleyball	425	55	210	27	72	9	63	8	10	1	35	4	780

Spring—													
38. Archery	208	29	173	24	81	11	59	8	202	28			723
39. Baseball	530	68	142	19	40	5	55	7	11	1	60	8	778
40. Bowling	92	12	91	12	88	12	77	11	383	53			731
41. Canoeing	388	55	100	14	44	6	12	1	165	22			709
42. Diving	282	40	98	14	69	10	79	11	178	25			693
43. Fundamental Exercises (feet and abdominal)	65	9	128	17	138	19	355	50	39	5			725
44. Golf	308	45	132	19	52	7	30	4	180	25			702
45. High Jump	208	28	198	26	122	16	182	24	47	6	42	5	757
46. Hiking	518	69	154	20	50	6	25	3	4	5			751
47. Horseback Riding	475	67	70	9	33	5	13	2	121	17			712
48. Hurdling	105	14	138	19	143	19	176	24	162	24	39	5	724
49. Life Saving	198	26	116	15	96	13	80	10	202	26			792
50. Natural Dancing	190	26	131	19	102	14	284	39	21	2			728
51. Sprints	116	16	107	16	129	18	165	23	194	27	30	4	713
52. Squad Practice on Skills	50	7	144	21	174	28	268	39	55	8			693
53. Standing Broad Jump	128	19	190	26	135	18	210	30	48	7	22	3	713
54. Swimming	514	12	90	13	35	5	34	5	34	5			707
55. Tennis	545	80	95	11	13	2	6	1	44	6			683
56. Throwing Events	159	22	166	24	155	22	150	21	78	11	32	4	708

A number of tabulations were made and percentages were computed. The ten activities which the girls liked very much were recorded in the order of preference:

Tennis	80%	Baseball	68%
Swimming	74%	Horseback Riding	67%
Basketball	74%	Volleyball	55%
Skating	74%	Canoeing	52%
Hiking	69%	Tobogganing	48%

The ten activities which the girls disliked were likewise recorded in percentages of those who dislike it.

Fundamental Exercises (feet and abdominal)	50%	Calisthenics	37%
Marching	48%	Tumbling	30%
Folk Dancing	42%	Stunts	26%
Squad Practice on Skills	40%	High Jumping	24%
Natural Dancing	39%	Sprints	23%

According to the findings, a large percentage do not like squad practice on skills. This activity in and of itself is not interesting. It has come because of a felt need. The investigator finds that if the girls themselves feel the need of practice on certain skills they thoroughly enjoy working on them. However, the investigator does not believe an activity is of no value because only 25 per cent like the activity. For those who like it very much, provision should be made by offering an elective program.

It is interesting to note that the most popular activities have great carry-over value for leisure time, much social approval, consist of big-muscle activity, and are, in most cases, fairly inexpensive. Seventy per cent of them are individual activities and can be carried on with boys. The least popular activities have little carry-over value for leisure time, little social approval, and are not carried on with boys.

ACTIVITIES IN WHICH SPECIFIC COACHING IS DESIRED

	Lincoln	*North*	*Roosevelt*	*Totals*	*Total Per Cents*
Total Number in School	138	373	273	784	
Activity					
Apparatus	0	10	9	19	3%
Archery	41	83	65	189	33%
Baseball	13	27	20	60	8%
Basketball	2	45	25	72	10%
Bowling	21	48	31	100	13%
Calisthenics	3	5	5	13	1%
Canoeing	47	103	98	248	33%
Clogging	19	49	14	82	11%
Deck Tennis	32	42	10	84	11%
Diving	45	149	114	308	40%
Fieldball	6	10	6	2	3%
Folk Dancing	5	9	3	17	2%
Fundamental Exercises	12	14	8	34	5%
Golf	49	179	117	345	46%
High Jump	10	14	18	42	5%
Hiking	11	17	11	39	5%
Hurdling	13	15	11	39	5%
Horseback Riding	41	167	105	313	41%
Ice Hockey	27	75	38	140	20%
Life Saving	39	129	58	226	31%
Marching	3	2	3	8	1%
Natural Dancing	29	44	21	94	12%
Skating	40	94	49	183	25%
Soccer	3	6	3	12	1%
Sprints	8	13	9	30	4%
Stunts	9	21	6	36	4%
Skiing	32	82	59	173	23%
Standing Broad Jump	4	12	6	22	3%
Squad Practice	19	13	10	42	6%
Swimming	37	149	74	360	50%
Tobogganing	18	53	33	104	14%
Tennis	41	218	118	377	50%
Throwing Events	11	11	10	32	4%
Tumbling	5	16	9	30	4%
Volleyball	8	14	13	35	4%

The ten activities which the girls most prefer coaching in are listed below in the order of preference.

Tennis	50%	Canoeing	33%
Swimming	50%	Life Saving	31%
Golf	46%	Skating	25%
Horseback Riding	41%	Skiing	23%
Diving	40%	Ice Hockey	20%

At present a large amount of our teaching and coaching is done by mass work. There is not much specific coaching as is carried on for interscholastic teams. Since it is found that so many want specific coaching, some provision should be made for it, even though it has to be done by student leaders who have received training.

AN ANALYSIS OF ATTITUDES AND INTERESTS

Tabulations were made on each item. Percentages were computed. An analysis was made. A number of correlations were computed statistically. Significant differences were figured.‡ Differences in the following data are significant unless stated to the contrary.

Intercorrelations were computed for most of the items in the questionnaire (items 1, 2, 3, 4, 7, 12, 15, 17, 18, 23, 24, 25, 26). To the surprise of the investigator, these correlations were almost all very low, indicating that there was a large degree of specificity in these items, and that they have very little in common. The highest of the intercorrelations was .32. This fact would indicate that the individual differences are very wide and extremely varied, rather than well defined in types or categories. This would further indicate that in dealing with individual girls, more than a cursory study should be made of their interests and needs. A teacher should not give up until she has exhausted all of her resources.

TABLE OF INTERCORRELATIONS COMPUTED FOR THE FOLLOWING ITEMS OF THE QUESTIONNAIRE:

	2	3	4	7	12	15	17	18	23	24	25	26
1	—.07	—.06				—.10	.01		—.14	—.15	—.05	—.08
2		—.03	—.36	—.04	—.06	.08	.04	—.01	.09	.10	.02	.05
3			.02	—.01	.04	—.07	.08	.06	.01	.04	.04	.03
4				—.02	.14	—.13		—.20	—.19	—.08	—.09	—.18
7					—.06	.02	—.05	.10	.01	.03	.08	.07
12						.04	—.05	—.18	—.06			—.24
15							.00	.08	.16	.08		.08
17								.16	.08	—.02	.11	.14
18									.30	.14	.21	.32
23										.30	.20	.22
24											.14	.10
25												.22

FINDINGS ON MOTIVATION

I. *Ninety-six per cent when they see a good diver or tennis player want to be a better one themselves.*

Four per cent are affected very little by it.

A. Seventeen per cent of the above group, after practicing much and not being able to acquire much skill in some particular activity, give it up and work on one in which they already excel.

Twenty-six per cent of the above group do likewise.

B. Fifteen per cent of this group lose interest in that activity.

Thirty-seven per cent of this group lose interest in that activity.

C. Sixty-eight per cent of this group keep on practicing that activity.

Thirty-seven per cent of this group keep on practicing that activity.

‡ If the differences were found to be as great or greater than three times the standard deviation of the difference, it was considered significant.

II. *Ninety per cent of the eight hundred girls like to appear vigorous and snappy.*	*Four per cent do not like to appear vigorous and snappy.*	*Six per cent are indifferent to appearance so far as vigor and snap are concerned.*
A. Seventy-three per cent of the above group like to train and get in good physical condition.	Sixty-eight per cent of the above group should like to do likewise.	Fifty-four per cent of the above group should like to do likewise. No significant difference between groups one and two.
B. Sixty-five per cent of this group, up to the age of eleven or twelve, participated much in physical activity.	Twenty-nine per cent of this group did likewise.	Six per cent of this group did likewise.
C. Seventy-four per cent of this group participated some up to the age of eleven or twelve in physical activities.	Eighteen per cent of this group participated some.	Eight per cent of this group participated some. No significant difference between groups two and three.
D. Forty-seven per cent of this group participated little up to the age of eleven or twelve in physical activities.	Forty-four per cent of this group participated little.	Nine per cent of this group participated little. No significant difference between groups one and two.
E. Only two per cent of this group feel their health should be under a doctor's care.		Nine per cent of this group feel their health should be under a doctor's care.
III. *Twenty per cent of the eight hundred girls think they look well in gym and swim suits and like to wear them.*	*Eighty per cent of the eight hundred girls think they look better in street clothes.*	
A. Thirty-four per cent of the above group are not very good in academic subjects and like to excel in physical activities.	Twenty per cent of the above group should like to do likewise.	
B. Sixty-six per cent of this group do not wish to excel for that reason.	Eighty per cent of this group do not wish to excel for this reason.	
C. Seventy-five per cent of this group, up to the age of eleven or twelve, participated much in physical activity.	Sixty-one per cent of this group did likewise.	
D. Eighty-six per cent of this group should like to train much and get in good physical condition.	Seventy per cent of this group should like to train much and get in good physical condition.	
E. Thirteen per cent of this group should like to train a little and get in good physical condition.	Twenty-three per cent of this group should like to train a little.	
F. One per cent of this group does not care about training to get in good physical condition.	Seven per cent of this group does not care about training to get in good physical condition.	

Ninety-one per cent of the eight hundred girls like to appear vigorous and snappy. Of this group 84 per cent have their surplus energies and interests in physical activities. Even 44 per cent of the group who are indifferent to their appearance so far as vigor and snap are concerned have their surplus energies and interest in physical activities.

Twenty per cent of the eight hundred girls think they look well in gym and swimming suits and would like to wear them while 80 per cent think they look better in street clothes. This may be a factor to be used for motivation in that the parts of the body which are exposed are usually beautified. Forty-two per cent of the group who like to wear gym and swimming suits believe their health is excellent while only 29 per cent of the other group do. Does this not present possibilities for motivation? Seventeen per cent of the group who like to wear gym and swimming suits believe their skill is excellent while only 3 per cent of the other group do.

Ninety-one per cent of the eight hundred girls have boy friends who like a girl who is athletic and skillful in sports.

Is there not significance for the junior high teacher in the fact that 65 per cent of the girls participated much in physical activity up to the age of eleven or twelve years?

The chief motivating factors found in this study are:

1. The influence of athletes who excel. This suggests that it is desirable that the teacher excel in some physical activity.
2. The love of a snappy vigorous appearance.
3. The desire to retain or develop a bodily health and vigor through training.
4. The influence of "boy friends" who like the type of girl who is athletic and skillful in sports.

THE NEED FOR A PROGRESSIVE PROGRAM

After finding that 56 per cent of the 800 girls examined have their surplus energies and interests in physical activities, we found that 92 per cent of this group prefer a progressive program in physical education instead of just exercise. Even 75 per cent of the group whose energies and interests are elsewhere also prefer a progressive program instead of just exercise.

These percentages indicate that both those who devote their surplus energies to physical activities as well as those who do not, favor a progressive program. *Mere exercise* was not found popular with the group study. The existence of this interest in a progressive program forms a stable basis for the work of the physical education teacher.

FINDINGS ON SKILL AND INTEREST

I. *Thirteen per cent of the eight hundred girls become discouraged in playing a game in which they do not play well, and so stop playing it.*	*Seventy per cent do not become discouraged but keep on practicing until skill is average.*	*Seventeen per cent keep on practicing until skill is above the average.*

A. Thirteen per cent of the above group believe their health is excellent.	Thirty-three per cent of the above group believe their health is excellent.	Forty-eight per cent of the above group believe their health is excellent.
II. *Twelve per cent become discouraged in playing a game in which they play poorly and so stop playing it.*	*Seventy per cent keep on practicing until skill is average.*	*Eighteen per cent keep on until skill is above average.*
A. Forty-one per cent of the above group after practicing much and still not acquiring much skill in some particular activity give it up and work on one in which they already excel.	Eighteen per cent of the above group do likewise.	Nine per cent of the above group do likewise.
B. Thirty-six per cent of the group lose interest in that activity.	Sixteen per cent of the group lose interest in that activity.	Four per cent of the group lose interest in that activity.
C. Twenty-three per cent of the group keep on practicing that activity.	Sixty-six per cent keep on practicing that activity.	Eighty-seven per cent keep on practicing that activity.
D. Thirty-nine per cent of the group have surplus energies and interests in physical education.	Fifty-five per cent of this group have surplus energies and interests in physical education.	Seventy-six per cent of this group have surplus energies and interest in physical education.
E. Twelve per cent of the group believe skill excellent or very good. Seventy per cent of the group believe skill average.	Twenty-one per cent believe skill excellent or very good. Seventy-four per cent believe skill average.	Forty-two per cent believe skill excellent or very good. Forty-eight per cent of group believe skill average.
F. Sixty-two per cent of group (up to age of eleven or twelve) participated much in physical activity.	Sixty-two per cent did likewise.	Seventy-six per cent did likewise.

There is no significant difference between items one and two.

G. Fifty-six per cent of this group would like to train and get in good physical condition.	Seventy-one per cent of this group would like to do likewise.	Eighty-four per cent of this group would like to do likewise.
III. *Twenty-five per cent of the eight hundred girls have just as much fun playing a game in which they do not play well as one in which they do.*		*Seventy-five per cent have more fun playing a game in which they play well.*
A. Seven per cent of the above group become discouraged in playing a game in which they play poorly and so stop playing it.		Fourteen per cent of the above group become discouraged and stop playing it.

B. Twelve per cent, after practicing much and still not being able to acquire much skill in some particular activity, give it up and work on one in which they already excel.		Twenty-two per cent do likewise.
Seventy-six per cent keep on practicing that activity.		Sixty per cent keep on practicing that activity.
IV. *Nineteen per cent, after practicing much and not being able to acquire much skill in some particular activity, give it up and work on one in which they already excel.*	*Fifteen per cent lose interest in that activity.*	*Sixty-six per cent keep on practicing that activity.*
A. Fifty-three per cent of this group like to train and get in good physical condition.	Sixty per cent of this group do likewise.	Eighty-three per cent of this group do likewise.
B. Thirty-four per cent of this group like to train a little.	Thirty per cent of this group do.	Fifteen per cent of this group do.
C. Thirteen per cent of this group do not care about training.	Ten per cent of this group do not care about training.	Two per cent of this group do not care about training.

There is no significant difference between groups one and two.

V. Seventy-six per cent of the eight hundred girls like to play games with girls of equal skill. Twenty-four per cent of them like to play games with girls of greater skill. Less than 1 per cent like to play games with girls of less skill.

The tabulation of responses on skill and interest seems to show that there is no clear relation between skill and interest, the correlation being .008. It is significant that 25 per cent of the 800 students studied have just as much fun playing a game in which they do not play well. On the other hand, 75 per cent have *more* fun playing a game in which they play well, but only 12 per cent of the total become discouraged and stop playing the game.

The group which becomes discouraged is the group which is poorest in health, while the group which becomes least discouraged has the best health.

It is shown that about twice as great a percentage of girls whose surplus energies and interests are in physical activities, keep on practicing an activity rather than becoming discouraged and giving it up, than those whose surplus energies and interests are elsewhere.

In the matter of liking to train to get in good physical condition, there is found no significant difference as regards whether the girls become discouraged in practicing on an activity or keep on practicing it until average or above. Apparently there is satisfaction in skillful play.

The findings indicate that 76 per cent of the eight hundred like to play games with girls of equal skill. Twenty-four per cent like to play with girls of greater skill, while less than 1 per cent like to play games with girls of less skill. This tends to show that skill of associates in physical activities is an important factor in interest.

FINDINGS ON COMPENSATION

Twenty-four per cent of the eight hundred girls who are not good in academic subjects wish to excel in physical activities.

Ninety per cent of this not so academically minded group prefer a progressive program in physical education.

There is no significant difference as to preference for a progressive program between this group and the group which does not wish to excel in physical activities because of lower academic standing. The findings show that a group of girls who are not outstandingly good in academic subjects apparently wish to compensate by excelling in physical prowess.

FINDINGS ON COMPETITION

I. *Sixty-seven per cent of eight hundred girls have had much competitive feeling in physical activities.*	*Twenty-five per cent have had little competitive feeling in physical activities.*	*Eight per cent have never had a competitive feeling in physical activities.*
A. Twenty per cent of the above group keep on practicing until skill is above average.	Fifteen per cent of the above group keep on practicing until skill is above average.	Three per cent of the above group keep on practicing until skill is above average.
B. Eighty-seven per cent prefer a progressive program of physical education instead of just exercise.	Eighty-two per cent prefer a progressive program of physical education instead of just exercise.	Sixty-eight per cent prefer a progressive program of physical education instead of just exercise.

II. *Sixty-seven per cent of the eight hundred girls play to win.*

Thirty-three per cent of the eigh. hundred girls play just to be playing—not caring who wins.

Contrary to popular opinion competition plays an important rôle in the physical activities of the high school girl. Sixty-seven per cent of those studied claimed to have much competitive feeling and only 8 per cent admitted never having had a feeling for competition. Those with the least competitive feeling tend to possess the least perseverance and those with the most competitive feeling have the highest rate of perseverance in the mastery of physical skill. Those with the least competitive feeling care least for a progressive program of physical activity.

SUMMARY

As a result of this study the investigator feels that in planning a program there are certain findings which should be seriously considered

in the selection of activities and the method of presentation. Some of the most important of these are as follows:

1. Both the academically and the non-academically minded groups prefer a progressive program in physical education. This indicates very clearly to the investigator, that in planning a program this fact should be taken into consideration. The girls can be led to participate in the planning of the program. Those programs which are not so definitely planned will not be so satisfactory. This would also emphasize the desirability of a better and more complete curriculum in physical education.

2. It is shown that the girls prefer a definite teaching or coaching of skills. We should give opportunity for every group to become at least average in skills. We should give opportunity for another group to become more skilful, since it is shown that a certain percentage of the girls wish to become better than average.

3. Regardless of the type of teaching or even with no teaching some activities are still popular. Such activities as skating, horseback riding, tennis, and tobogganing have a natural urge. There are some activities such as natural dancing, about which we cannot tell at the present time from the results of this study. They may need a higher type of motivation if we find they are worth including in our senior high program to any great extent.

4. Practically all girls are motivated by seeing a good performer. Either the teacher should herself be a good performer, should use students who can demonstrate well, or should make some provision for bringing in certain ones who are outstanding in various activities.

5. It is shown that we need to take boy friendships into consideration in selecting activities. Since the girls prefer certain activities which can be carried on with boys, perhaps we should give more opportunity for this, such as to allow the boys and girls to swim together, play tennis and golf together, and perhaps such games as volleyball.

6. Most of the girls like to appear vigorous and snappy and prefer to train to get and keep in good physical condition. The teacher may well keep this in mind in appearing as an example, and may *assume* this fact in appealing to the girls to train.

7. A large group of girls likes to play with girls of equal skill, another group likes to play with girls of greater skill, but less than 1 per cent like to play with girls of less skill than they themselves have. Most of the girls play to win. This indicates to the investigator that groups should not be just thrown together for team games. They should be classified and put into groups of different skill levels.

8. It is shown that a certain group is not good in academic subjects and so wishes to compensate by excelling in physical activity. This lead has not been followed up in the study, but it indicates a number of possibilities in a larger program of mental hygiene.

9. Of the group who think they look well in gym and swimming

suits and like to wear them, twice as many believe their health is excellent as do those who prefer to wear street clothes. This indicates to the investigator a possible means of motivation to the group who prefer to wear street clothes. If this group could be made to believe that they too would look well in gym and swimming suits if they were healthier, it might motivate them to strive for better health.

10. And finally it is shown that over half of the girls have much of their surplus energies and interests devoted to physical activities. This indicates to the investigator that the physical education teacher has an exceptional opportunity through the physical activities program to effect many educational changes in the likes of the students.

APPENDIX

Name..... No.....
No.....

Lincoln North Roosevelt Grade.....

1. I like to play games with girls of equal skill..... .....
   greater skill..... .....
   less skill..... .....
2. A. I play to win..... .....
   B. I just play to be playing, not caring who wins..... .....
3. I have just as much fun playing a game in which I do not play very well as I do in a game in which I play well..... .....
4. I have never had a competitive feeling in physical activities..... .....
   little..... .....
   much..... .....
5. A. I become discouraged in playing a game in which I play poorly so I stop playing it..... .....
   B. I do not become discouraged. I keep on practicing it until my skill is average..... .....
   above average.... .....
6. I do not feel like playing because other girls make me feel that I am poor in the game..... .....

Remarks.....
.....
.....

7. When I see a good diver or tennis player, it makes me want to be a better one myself..... .....
   It has little effect upon me..... .....
8. After practicing much and still not being able to acquire much skill in some particular activity, I give it up and work on one in which I already excel..... .....
   I lose interest in that activity..... .....
   I keep on practicing that activity..... .....
9. I liked physical education before I came to high school..... .....
   since I came to high school..... .....
10. The idea of physical education was sold to me in the grades..... .....
   in junior high..... .....
   in senior high..... .....
   never..... .....
11. The idea of physical education was sold to me by my parents..... .....
   playmates..... .....
   physical education teacher..... .....
   never..... .....

12. A. My boy friends do not like a girl who is athletic..... .....
B. My boy friends like a girl who is athletic and skillful in sports .....
13. A. I like to appear vigorous and snappy..... .....
B. I do not like to appear vigorous and snappy..... .....
C. I am indifferent to my appearance so far as vigor and snap are concerned ....
14. A. I think I look well in gym and swimming suits and like to wear them..... .....
B. I think I look better in street clothes..... .....
15. I like to show off my skill to others..... .....
16. I believe my skill increases my poise..... .....
self-assurance..... .....
self-confidence..... .....
17. I am not very good in my academic subjects so I want to excel in my physical activities..... .....
18. A. My surplus energies and interest are in physical activities..... .....
B. My surplus energies and interest are elsewhere..... .....
19. I prefer a progressive program of physical education instead of just exercise ....
20. I prefer just exercise..... .....
21. I am just not interested in physical activities..... .....
22. I take part in physical activities so that I will have a:
better figure..... .....
more poise..... .....
more self-control..... .....
better complexion..... .....
greater skill in activities..... .....
know sports better so I can be able to take part in them with boys out of school..... .....
more friends..... .....
so that I will be more popular..... .....
a leader..... .....
a good sport..... .....
better able to keep out of traffic accidents..... .....
better able to take care of myself in the world..... .....
only because it is required..... .....
23. I believe my skill in activities is excellent.....very good.....
average.....poor.....very poor.....
24. I feel that my health is excellent.....better than average.....
average.....fair.....should be under a doctor's care.
25. Up to the age of eleven or twelve years my participation in physical activities was much.....some.....little.....
26. I should like to train and get in good physical condition.
train much..... .....
train little..... .....
don't care about it..... .....
27. What leisure-time physical activities do you engage in to the extent of at least one-half hour per week during the season?.....
.....
.....
.....
28. What additional ones would you engage in if you had the facilities, time, and money?
.....
.....

The Progressive-Part vs. the Whole Method of Learning Motor Skills*

By CLAYTON T. SHAY
Graduate Scholar, School of Education,
Syracuse University

INTRODUCTION

ACCORDING to Dr. Pechstein, the following definitions are given for the whole and part methods of learning: "Whole method procedure demands the continuous repetition of an entire body of material until the desired stage of mastery is attained. Part method procedure demands an initial mastery of the definite sections of material and their final connection of these different sections in proper serial order." [1]

The progressive-part method of learning demands the initial mastery of the first section of the "body of material." After this section is learned, the subject masters the second part, following which the two parts are combined and learned as one. He next learns the third section of the material, and the three sections are joined together. This procedure is continued, until the entire exercise is mastered.

The study of the superiority of the whole and part methods of learning has been one of constant controversy. The initial experimental study was published in 1900 by Steffens. [2] Since that time there have been over thirty experiments conducted on this problem, but the results have failed to reach general agreement.

McGeoch states that "the three investigators, Steffens, Pentschew, and Wylie, found the whole method superior to a pure part with adults, while the experiments of Meumann, Reed, and Pechstein gave the opposite results." [3]

Probably the first experiment in the motor field was made by L. A. Pechstein, [4] then at the University of Rochester and now Dean of Teachers College, University of Cincinnati. He used the maze with both human beings and animals as subjects. Other experiments followed: Barton

---

* A paper presented before the Research Section at the Eastern District Physical Education Association Convention, April, 1934, at Atlantic City, N. J.

1 L. A. Pechstein, "Alleged Elements of Waste in Learning a Motor Problem by the Part Method," *Journal of Educational Psychology*, 8 (May, 1919), 303.

2 L. Steffens, "Experimentelle Bertrage zur Lehre vom okonomisher Lerner," *Zeutschrift zur Psychologie*, 22 (1900), 321-382.

3 G. O. McGeoch, "Whole-Part Problem," *Physiological Bulletin*, 23 (1931), 713-739.

4 L. A. Pechstein, "Whole vs. Part Methods in Motor Learning: A Comparative Study," *Psychological Monograph* 23, No. 99 (1917), 80.

utilized the maze; [5] Mather and Kline, cardboard puzzles; [6] Koch, finger sequences; [7] Gopalaswami, mirror drawing; [8] Barton, typewriting; [9] Brown, piano scores; [10] and Craft, card sorting. [11]

The same contradiction, as to the relative advantages of the whole and part methods of learning, that exists in the rote field, is also evident in motor learning. The results of the experiments, made by Barton, Mather and Kline, and Koch, demonstrate the superiority of the pure part method of learning. Those of Pechstein and Gopalaswami favor the progressive-part procedure, while Barton and Craft find that the whole method should be used in teaching motor skills.

In addition to conflicting views between experimenters, it has been found that experiments conducted by the same individual, using different skills, have yielded different results. Barton, in his experiment with the maze drew the conclusion that the part method is best, while the results of his experiment with typewriting favor the whole method.

STATEMENT OF PROCEDURE

Selection of Activities.—There have been no studies, as far as the writer can ascertain, to determine the superiority of the whole or part methods of learning gymnastics. Because of the number of exercises from which to select, gymnastics was chosen as the field in which to conduct this experiment. Two additional advantages determined this choice, which are as follows: (1) an objective criterion is possible for scoring success or failure in motor learning, and (2) subjects could be secured that have not participated or been trained in gymnastic exercises.

Perhaps other fields are just as fertile in their choice. For example, the writer contemplated using the shot put or the hammer throw or the crawl stroke in swimming. These could be taught as a whole or could be divided into parts and taught by the part learning procedure. Several difficulties, however, soon became evident. These were: (1) in establishing an objective criterion for determining success or failure; (2) in securing subjects that have not participated in these or relative activities; and (3) in controlling outside practice without the knowledge of

---

[5] J. W. Barton, "Smaller vs. Larger Units in Learning the Maze," *Journal of Experimental Psychology*, 4 (1921), 418-429.

[6] J. E. Mather, and L. W. Kline, "The Psychology of Solving Puzzle Problems," *Ped. Sem.*, 29 (1922), 269-282.

[7] H. L. Koch, "A Neglected Phase of the Part-Whole Problem," *Journal of Experimental Psychology*, 6 (1923), 366-376.

[8] M. Gopalaswami, "Economy in Motor Learning," *British Journal of Psychology*, 15 (1925), 226-236.

[9] J. W. Barton, "Comprehensive Units in Learning Typewriting," *Psychological Monograph*, 35, No. 164 (1926), 47.

[10] R. W. Brown, "A Comparative Study of the 'Whole,' 'Part,' and 'Combination' Methods of Learning Piano Music," *Journal of Experimental Psychology*, 11 (1928), 235-247.

[11] L. W. Craft, "Whole and Part Methods with Non-Serial Reactions," *American Journal of Psychology*, 41 (1929), 543-563.

the experimenter. These activities, consequently, were discarded in favor of gymnastics.

After the field was selected, it was necessary to choose a representative gymnastic exercise, one that could be taught using the different methods of learning. After a careful survey of the field, the upstart or kip on the horizontal bar was chosen.

The advantages of using the upstart on the horizontal bar as a representative exercise are threefold: (1) the exercise can be taught by either the whole or part methods of learning; (2) the horizontal bar can be taken down and put away after each class period, so that the number of trials per man can be controlled; and (3) the criterion of success is objective. Either the subject succeeds or he fails. There is no intermediate.

Equation of the Groups.—The subjects were freshmen at Syracuse University and were equated from two separate physical education classes that met twice each week. Two classes were used, so that neither class was influenced by the method taught to the other.

In equating the groups, two tests were used, as follows: (1) Brace Scale of Motor Ability Tests,[12] and (2) Rogers Physical Capacity Tests.[13] It was thought advisable to equate the groups on their motor ability because gymnastics is largely a field of motor coordination. According to Brace, these tests "are intended to test motor ability of a general sort and native rather than acquired."[14] It was also thought advisable to equate the subjects on the basis of a second test. The Rogers Strength Index, consequently, was selected because of its high validity as a test of general athletic ability.[15]

The results of equating, according to the tests selected, are given in Table I.

TABLE I

EQUATION OF THE TWO GROUPS ACCORDING TO THE ROGERS STRENGTH INDEX AND THE BRACE SCALE OF MOTOR ABILITY

Group A (Whole Method)		Group B (Progressive Part Method)	
Rogers Strength Index:		*Rogers Strength Index:*	
Mean	1800	Mean	1794
Standard Deviation	269	Standard Deviation	287
Brace Scale of Motor Ability:		*Brace Scale of Motor Ability:*	
Mean	64.76	Mean	64.50
Standard Deviation	10.76	Standard Deviation	10.44

[12] D. K. Brace, *Measuring Motor Ability*, New York: A. S. Barnes and Company, 1930.

[13] F. R. Rogers, *Physical Capacity Tests*, New York: A. S. Barnes and Company, 1931.

[14] Brace, *op. cit.*, p. 8.

[15] F. R. Rogers, *Fundamental Administrative Measures in Physical Education*, pp. 141-142, Newton, Mass.: The Pleiades Co., 1932.

Only those individuals who had not been trained on the apparatus were selected. Thus the factor of previous training was held constant. A survey of the subjects was made and all of those with former experience on any piece of gymnastic apparatus were dropped from the experiment. This eliminated all carry-over value from one piece of apparatus to another, as well as from previous work on the horizontal bar.

Methods of Teaching.—The subjects comprising Group A were taught by the whole method of learning. The entire exercise was attempted at each trial. Group B, working with the progressive-part procedure, learned each of the following four sections: (1) the swing; (2) the arch of the body; (3) flexion of the thighs, bringing the feet to the bar; and (4) extension of the thighs. The swing was first taught to the subjects and after it had been mastered, the arch of the body during the swing was added. After this combined exercise had been learned, the flexion of the thighs, bringing the feet to the bar, was given. After these three movements had been satisfactorily completed, the extension of the thighs was added, resulting in a position of front rest on the horizontal bar. This completed the learning of the exercise.

Each class was divided into two groups to facilitate their handling and also to hold their interest throughout the experiment. The same number of trials was given to each man during each class period. At the end of the period, the horizontal bar was taken down, thus eliminating the possibility of uncontrolled practice.

At first it was planned to use three methods, but, when tried, the pure part procedure proved a failure. It was impossible for the subjects to master each section separately, as each succeeding part depended upon the foregoing procedure. This method was discarded finally and the whole and progressive-part methods only were used.

The goal was shown to each group and the experiment was explained carefully. There were sixteen subjects in each class and these were divided into two groups of eight each. Each man was allowed five trials during each class period. The criterion used for the learning of the upstart was three consecutive successes.

RESULTS OF THE EXPERIMENT

The results of the experiment in tabular form are given in Table II.

TABLE II

RESULTS OF THE TWO METHODS OF LEARNING USED IN THIS EXPERIMENT

Group A (Whole Method)		Group B (Progressive Part Method)	
Total number of trials	616	Total number of trials	781
Mean	38.5	Mean	48.8
Standard Deviation	9.80	Standard Deviation	8.04

The total number of trials demonstrates the superiority of the whole method over the progressive-part procedure in learning the upstart on

the horizontal bar. The arithmetic difference betweeen the 2 means is 10.3 trials. Is this a reliable difference? Would other groups, equated on the same basis and taught by the whole and progressive methods of learning, give approximately the same difference?

To answer the above questions, the ratio between the actual difference between the two means and the standard error of the difference must be determined. Garrett states: "It is usually customary to take a $\frac{D}{\sigma \text{ diff.}}$ of 3 as indicative of complete reliability, since -3σ includes practically all of the cases in the 'distribution of differences' below the mean. $\frac{D}{\sigma \text{ diff.}}$ greater than 3 is to be taken as indicating just so much added reliability."[16]

The actual difference between the two means is 10.3 trials and the standard error of the difference is 3.16. When the formula, $\frac{D}{\sigma \text{ diff.}}$ is applied, the resulting ratio is 3.3. According to the table of Fractional Parts of the Total Area under the Normal Probability Curve,[17] this indicates that the chances are 9,995 in 10,000 that the true difference between Group A, learning by the whole method, and Group B, learning by the progressive-part method, will *always* be greater than zero.

It is of interest to note that correlations made between the number of trials and the Strength Index, the Physical Fitness Index, and the Brace Scale of Motor Ability favor the whole method of learning motor skills. These correlations are given in Table III.

TABLE III

THE CORRELATIONS BETWEEN THE NUMBER OF TRIALS AND THE STRENGTH INDEX, THE PHYSICAL FITNESS INDEX, AND THE BRACE SCALE OF MOTOR ABILITY

Trials correlated with:	Group A (Whole Method)	Group B (Progressive Part)
1. Strength Index	.78 ± .06	.41 ± .13
2. Physical Fitness Index	.82 ± .05	.59 ± .10
3. Brace Scale of Motor Ability.....	.52 ± .11	.35 ± .13

CONCLUSIONS

The results of this study indicate that the whole learning method is superior to the part method in learning the upstart on the horizontal bar.

The relative efficiency of the whole method may be explained by the following factors:

1. Attention was not distracted from the whole by the necessity for

[16] H. E. Garrett, *Statistics in Psychology and Education*, p. 133. New York: Longmans, Green and Company, 1926.

[17] Garrett, *op. cit.*, p. 91.

perfecting each part before proceeding to the next as was the case in the progressive-part method.

2. Meaning or "satisfyingness" was never violated by forced pauses.

3. Timing, an essential factor in learning gymnastics, favors the whole method.

This experiment suggests means of improving correct methods of instruction in gymnastics, to say nothing of such skills as swimming, track, golf, and tennis, each of which needs special experimental investigation.

Athletic Ability and Scholarship

A Résumé of Studies Comparing Scholarship Abilities of Athletes and Non-Athletes

By Elwood C. Davis, Ph.D.[1]
Professor of Physical Education,
The Pennsylvania State College
and John A. Cooper, D.Ed.
Educational Psychologist,
New York State Penal Institution

THERE are those who are skeptical of the athletic picture fitting into the educational frame. It is even held that no corner of the athletic design "squares," at present, within the rectangular frame of the educational institution. The well-known charges of proselyting, subsidization, and the other "evils," as reported in *American College Athletics*;[2] the health and safety of athletes; the effects of athletic participation upon scholastic standing; and, the other well-publicized "conditions in athletics" are some of the imperfections in the athletic fabric which are said to need modification.

One of the most common points of attack against organized athletics within education's walls is that the athletes themselves are poor students, as compared with the non-athletes. Such statements have led to aroused emotions, spirited debate, and some productive controversy.

About thirty years ago, the first of studies devoted to discovering the *facts* related to this problem, was conducted at Amherst College. In this instance, the athletes appeared less favorably.[3] However, since that time over forty similar studies have been pursued in the secondary schools, colleges, and universities, with conflicting results.

At the present moment the issue is still not clean-cut because of such factors as a lack of agreement upon the definitions of "athlete" and "non-athlete"; disagreement over the validity of the tools used to measure "scholastic ability"; the unequal number of cases in the two groups in many studies; and, charges and countercharges of bias.

The following tables present concisely the pertinent points found in the forty-one studies of this problem. General conclusions appear after the résumé of the studies.

---

[1] The author wishes to state that full credit for the research and bibliographical work in connection with this article should be given to Dr. Cooper.

[2] Howard J. Savage. *American College Athletics*. New York: The Carnegie Foundation for the Advancement of Teaching, Bulletin Number Twenty-Three.

[3] A special press article to the New York *Times* as of March 17, 1934, states that twelve of the nineteen men at Amherst College this winter elected to Phi Beta Kappa were athletes!

RÉSUMÉ OF STUDIES

Date	Institutions Studied	Number of Cases Athlete	Non-Athlete	Findings
1903	Amherst College	318	1,692	The non-athletes exceeded the athletes in scholarship by 4 per cent. Only once in 18 years did the athletes exceed the non-athletes. The averages for football and baseball men fell below the average of non-athletes by 3.07 per cent and 4.63 per cent respectively while track men exceeded the non-athletes by .04 per cent. (23)[4]
1905	Rutgers College	416	2,728	Non-athletes have a higher percentage of their group receiving high grades and a lower percentage of their group receiving low grades than do athletes. (2)
1905	Bates and Bowdoin Colleges	336	1,536	At Bates College, over a period of five years, the non-athletes exceeded the athletes in scholarship by 5.6 per cent. At Bowdoin College, over a period of five years, the average rank of all athletes in all studies was 77.57, and that of non-athletes was 80.37. (12)
1915	University of Michigan	120	1,094	College athletes distribute their academic work in a well balanced manner over all fields of liberal studies. College athletes, like other types of students, neither overspecialize nor overdistribute their efforts. College athletes are not electing easy courses because they are easy. (9)
1917	High School St. Louis, Michigan	(Not known)		Athletics, when properly handled, do not in any school interfere with the studies of pupils. In 11 out of 15 instances, in this school, athletes ranked higher than non-athletes. (38)
1921	Harvard	348	1,252	Athletes found to be about as regular in attendance as non-athletes. Non-athletes exceeded the athletes in scholarship by a small margin. (1)
1921	University of Wisconsin	21	21	Athletes and non-athletes are practically equal scholastically. (29)
1921	Kansas City High Schools	39	39	Athletes were found to be of average mental ability. Athletes are slightly better scholars than non-athletes. (41)

[4] Indicates number of study in Bibliography.

Date	Institutions Studied	Number of Cases Athlete	Non-Athlete	Findings
1922	High School Students (Illinois)	535	535	Athletes have as much intelligence as non-athletes. The correlation between scholastic record and intelligence is slightly lower for athletes than non-athletes, but the comparison of the two groups on the basis of scholarship gave the non-athletes very little advantage. (32)
1922	Salinas Union High School (California)	20	138	Athletes had an average grade 4.45 per cent higher than all boys. Athletes receive scholastic grades comparable to others of equal intelligence. Participation in interschool athletics tends to raise scholarship. (40)
1923	Ohio State	242	2,961	Athletes are on the average about 8 per cent lower in intelligence than the average upper classmen. This is due to a smaller number of athletes of high grade rather than to a preponderance of those of low grade. (5)
1923	Pennsylvania State College	97	834	Scholarship of athletes was slightly lower than the average for the school as a whole. Football men rank appreciably below the scholastic average for the school. (25)
1923	Kansas State Teachers College	40	195	Those engaging in athletics had a higher scholastic average than the average of all men students. (31)
1923	Sullivan High School (Indiana)	67	67	Non-athletes did better school work than the athletes. Athletes worked more in accordance with their capacities than non-athletes. The athletes, both boys and girls, did better school work when they were not participating than when they were. (36)
1923	High Schools of Southern Michigan	1,153	5,266	A comparison of the distribution of grades for athletes and non-athletes is as follows: *A B C D* Ath. 12.3% 27.5% 31.7% 28.5% Non-A. 9.4% 28.8% 34.0% 27.7% Athletes do not take "snap courses." (37)

Date	Institutions Studied	Number of Cases Athlete	Non-Athlete	Findings
1924	47 Colleges and Universities	152	158	Athletic leaders had 44 below average, 26 average, 68 above average, and 14 in the honor group as compared with 28, 22, 69, and 39 respectively for non-athletic leaders. (18)
1924	University High School (Minnesota)	212 Total		The scholastic averages for the various athletic squads are as follows: Track 1.51; Cross-country 1.50; and Swimming 1.16. The school average, not including the squad average, is 1.00. (39)
1925	College of Wooster	114	213	The varsity athletes have the highest scores at all levels. Football men are not as good in scholarship as other varsity athletes. (24)
1925	Columbia College	86	337	More non-athletes obtained their degrees. Athletes spent, on the average, almost a semester longer in college. The proportion of athletes on probation at some time or other in their college course was more than three times as large as the proportion of non-athletes. Non-athletes averaged C+ in their course grades, whereas the athletes averaged C. Athletes averaged C— in the hard courses and barely B in the easy while non-athletes averaged C+ in the hard courses and a slightly better B in the easy. (27)
1925	Lincoln School of Teachers College, Columbia University	16	97	The athletic captains ranked relatively low in mental age and intelligence, but fairly high in scholarship. High physical achievement was the outstanding characteristic of the athletic leaders. The athletic leaders were the lowest of the leaders, in scholarship, but even they were at the average of their classes. (33)
1926	McGill University	80	779	Fewer athletes failed or withdrew during their first or second year. A larger percentage of athletes complete their courses. Athletes averaged slightly higher academically. Greater percentage of "A" men scholastically in the athletic group. (11)

Date	Institutions Studied	Number of Cases Athlete	Non-Athlete	Findings
1926	University of California	379	1,575	Students in athletics made slightly better grades than those not engaged in athletics. Slightly better grades in activities taking most time as compared with least time activities. (20)
1926	Hughes High School (Cincinnati)	100	100	The general scholarship average for the letter boys was 79.2 and for the non-letter boys was 80.1. There seems to be no justification for the assumption that letter boys are naturally much different in ability than other high school boys. (34)
1927	Yale	1,063	1,779	Athletes excelled non-athletes in intelligence test scores. (8)
1927	Cornell College (Iowa)	40	67	Athletes stay in college somewhat longer and a larger proportion of them graduate. Difference in scholarship is negligible. Those students participating in two or more sports are low in scholarship. Athletes seem to be a trifle more fond of the easy courses. Athletes do not dodge the hard courses as much as the non-athletes do. Very little difference in the percentage of athletes and non-athletes getting C's and D's in the popular courses. (15)
1927	Westminister College (Missouri)	(Not known)		Participation in athletics does not interfere with scholarship as indicated by the following grades: Basketball letter men 78.45 per cent; Football letter men 81.81 per cent; Baseball letter men 82.32 per cent; Track letter men 84.34 per cent; All letter men 82.26 per cent; and All students 82.69 per cent. (30)
1927	Drake University	95	362	There is a positive correlation between scholarship and participation in extra-curricular activities. Participants secure higher marks than non-participants. Barring other factors, neither participation alone, nor outside work alone, significantly affects scholarship. (19)

Date	Institutions Studied	Number of Cases Athlete	Non-Athlete	Findings
1927	Fresno State Teachers College (California)	29	58	During the period of intensive training and play, the football men did as well in keeping up their scholarship as the non-football men. Football men did slightly better in final records for the semester. Football men do not drop subjects more than others. Football men do as well as others in their academic work when judged in accordance with their aptitude and their semester records. (13)
1928	Harvard	301	505	No significant differences were found between athletes and non-athletes in respect to number of times on probation, average number of courses per semester, or selection of hard and easy courses. 81 per cent of the athletes were graduated in ten semesters or less as compared with 68 per cent of the non-athletes. Athletes required 8.01 semesters to graduate as against 8.08 for the non-athletes. Number of semesters remaining in college, athletes 7.37 and non-athletes 6.55. Average grade for athletes 3.15 and for the non-athletes 3.27. (28)
1928	Indiana University	1,027	14,132	A close relationship exists between intelligence and athletic success. Athletes are superior in scholarship to average men students. (26)
1928	111 Colleges and Universities	18,667 Total		The common notion that athletes in general are poorer students than non-athletes is erroneous. Participation in sports that require very hard training and long practice hours probably impairs the academic standing of certain athletes. (16)
1928	Muhlenberg College	(Not known)		No difference between athletes and non-athletes in number of hours carried and in average grades attained. The mean intelligence of athletes is slightly higher than that of non-athletes. The ranking of the sports in relation to intelligence scores is track, wrestling, tennis, baseball, football, and basketball. The ranking of the sports in relation to scholarship is tennis, track, wrestling, football, baseball, and basketball. (3)

Date	Institutions Studied	Number of Cases Athlete	Non-Athlete	Findings
1928	University of Minnesota	106	106	Football men are similar to a random sampling of non-athletes in age, geographical source, college distribution, level of parental education and occupation, economic experience, vocational choice, hours of sleep, hours of outside work, and number of credits carried. Football men are superior to non-athletes in: number of high school activities and survival in school. Football men are inferior in: high school and university scholarship, college ability ratings, and hours of study. Football men who reported for 25 or more practices were slightly superior to non-athletes in university scholarship. (22)
1928	Four Colorado High Schools	92	92	Athletics slightly decrease the scholastic efficiency of students. Boy athletes are on the average about a half-year older than the non-athletes, while girl athletes are about two months younger than the non-athletes. Boy non-athletes rank considerably higher in intelligence than the boy athletes, while girl non-athletes rank slightly lower than the girl athletes. Boy non-athletes rank considerably higher in achievement in school than the athletes, while the girl non-athletes rank slightly higher than the girl athletes. (35)
1928	Ohio State University	155	1,172	No significant difference in intelligence was found. The probation records favored the athletes considerably and the dismissal records favored the non-athlete about as much. Scholarship averages were almost identical. Athletes were 73 per cent more successful in securing degrees than were non-athletes. Athletes required about .2 of a quarter longer to get their degrees. (14)
1929	Princeton	278	340	Athletes had a lower academic mortality record. Smaller percentage of athletes dropped from classes for deficiencies in studies. (4)

Date	Institutions Studied	Number of Cases Athlete	Non-Athlete	Findings
1929	Arkansas State Teachers College	219	1,173	The average grades of athletes were lower than those of non-athletes. Baseball and track athletes made the lowest relative average; football athletes made decidedly the best relative average. Letter athletes made 7.4 per cent lower grades than non-letter athletes. All athletic groups made lower grades while participating. Athletes of medium intelligence were less affected by participation than either the athletes of low or high intelligence. (10)
1929	University of Minnesota	129	523	Athletes and non-athletes did not differ materially in: average percentile rank on the ability tests; proportion of each group placed on probation; proportion of degrees granted; grade point averages; and correlations between percentile ranks on the College Ability tests and grade point averages. Athletes earned slightly more credits per quarter in all colleges except Engineering. The various sports did not tend to differ significantly from one another in the different qualities measured. (17)
1930	University of Minnesota	596	302	Athletes are slightly lower in college ability and in scholarship, especially major sport athletes (football, basketball, baseball). Certain groups of athletes, again, especially major sport athletes tended to choose non-academic vocations more than non-athletes. (21)
1931	Pennsylvania State College	48	48	The non-athletes show a slight superiority in achievement test scores. Correlation between intelligence test scores and achievement test score is higher for athletes than for non-athletes. (6)
1932	Seven Colleges and Universities of Pennsylvania	159	159	The non-athletic groups show a slight superiority in achievement. The non-athletic groups show a greater variability. Correlations between intelligence scores and achievement scores indicate that the non-athlete works in slightly closer parallelism with his ability than does the athlete. (7)

GENERAL CONCLUSIONS

The reader is disappointed if he expected to find a substantial number of final conclusions from these studies which have been conducted in over two hundred institutions over a period of thirty years. It is not surprising that the results are conflicting, not only because of the reasons mentioned earlier in this paper but also because of the wide differences in the time devoted to each of the studies; the lack of similarity in procedures; the divergence in the type of tools used in securing the data; and, because of the wide variations in the kind and size of the groups studied by the different investigators.

However, it does appear that in most cases the non-athlete performs slightly better school work than the athlete, although the differences are of no *statistical* significance. The advantage seems to be in favor of the athlete graduating with his class, and the chances are greater that he will not drop out of school. It is significant to both the educator and the athletic coach that the athletes make better grades after the sport season ends. It is a question whether or not the athlete would rank considerably higher than the non-athlete if he were motivated to raise the quality of his work during the sport season to the level of the post-season period.

It appears that the ground is gradually being cleared for fruitful differences of opinion. There still remain such obstacles to the clarification of the issue as a lack of uniformity in the bases of grading; unreliable schemes of grading; a lack of valid tests of "intelligence" and "achievement"; and, the failure to conduct rigidly controlled experiments. In the final analysis it may be found that changes in methods of teaching and revised curriculums may arouse the interest of the athlete to a greater degree than has hitherto been done. At least the problem of the scholarship of athletes offers a direct challenge to the academic teacher as well as to the athletic coach.

BIBLIOGRAPHY

Studies in Colleges

1. "Athletics and Scholarship." *Harvard Graduates' Magazine,* Vol. 29: 588–90 (June, 1921).
2. Bevier, L. "Student Activities and Success in Life," *Educational Review,* Vol. 58: 1–7 (June, 1919).
3. Boyer, C. W. *College Athletics and Scholarship at Muhlenberg College,* Allentown, Pa.
4. Brigham, C. C. *A Study of Athletics and Scholarship in Princeton,* 1929.
5. Burtt, H. E., and Nichols, J. H. "Intelligence of Varsity Athletes," *American Physical Education Review,* Vol. 29: 125–28 (March, 1924).
6. Cooper, J. A. *The Effect of Participation in Athletics upon Scholarship Measured by Achievement Tests,* The Pennsylvania State College, 1931. (Master's Thesis)
7. Cooper, J. A. *The Effect of Participation in Athletics upon Scholarship Measured by Achievement Tests.* The Pennsylvania State College, 1932. (Doctor's Dissertation)
8. Crawford, A. B. "A Comparison of Students in Athletic and Non-Athletic Activity," *Yale Alumni Weekly.* Vol. 36: 350–8 (February 11, 1927).
9. Davis, Calvin O., and Pobanz, J. F. "Subjects Pursued by Winners of the 'M'

in All Subjects at the University of Michigan," *Educational Administration*, Vol. 4: 222–26 (April, 1918).

10. Estes, Guy Dan. *The Effect of Participation in Organized Athletics on School Grades in Arkansas State Teachers College*, University of Chicago, 1929. (Thesis)
11. Finlay, Ray. *The Comparative Academic Standing of Athletes and Non-Athletes.* McGill University, 1926. (Thesis)
12. Foster, W. J. "Intercollegiate Athletics and Scholarship," *Science*. Vol. 24: 21–28 (July, 1906).
13. Groves, John W. "Football Players Versus Non-Football Players," *Journal of Educational Research*. Vol. 17: 64 (January, 1928).
14. Hindman, Darwin A. "Athletics and Scholarship at the Ohio State University," *School and Society*, Vol. 30: 93–96 (July 20, 1929).
15. Hutchison, Mark E. "College Athletics and Scholarships," *School and Society*, Vol. 29: 151-52 (February, 1929).
16. *The Carnegie Foundation for the Advancement of Teaching*, Bulletin Twenty-Three, 1929.
17. Jacobsen, John Melseth. *The Scholarship of a Group of University Athletes as Compared with that of a Group of Non-Athletes*, University of Minnesota, 1929. (Thesis)
18. McCracken, G. Herbert. "The Athlete Challenges His Critics," *Literary Digest*. Vol. 82: 64–66 (July 12, 1924).
19. McCreery, O. G. *The Relationship of Participation in Extra-Curricular Activities to Success in College*, University of Minnesota, 1927 (Thesis).
20. Miller, Earl J. "A Statistical Study of the Relationship between Extra-Curricular Activities and Scholarship," *Athletic Journal*, Vol. 7: 34–44 (May, 1927).
21. Morton, L. M. *Comparative Study of Freshman Athletes and Non-Athletes With Respect to a Limited Number of Psychological Measures*, University of Minnesota, 1930. (Thesis)
22. Peterson, C. R. *A Personnel Study of Freshman Football Candidates*, University of Minnesota, 1928. (Thesis)
23. Phillips, Paul G. "Competitive Athletics and Scholarship," *Science*, Vol. 27: 547–53 (April 3, 1908).
24. Remp, Martin. "A Comparison of the Scholastic Records of Athletes and Non-Athletes," *American Physical Education Review*, Vol. 30: 187–192 (April, 1925).
25. Rhoton, Paul. *Intercollegiate Athletics and Scholarship*, The Pennsylvania State College, 1923. (Thesis)
26. Ruble, Vern W. "A Psychological Study of Athletes," *American Physical Education Review*, Vol. 33: 219–34 (April, 1929).
27. Savage, Howard J. "College Athletics and Scholarship," *The Carnegie Foundation for the Advancement of Teaching*, Twenty-Third Bulletin, 1929.
28. Snedden, Donald. "Athletics and Scholarship," *Harvard Alumni Bulletin*, Vol. 31: 362–67 (December 20, 1928).
29. Wardlaw, Patterson. "Do Football Players Study?" *American Physical Education Review*, Vol. 32: 304 (April, 1927).
30. Westminister College, Fulton, Missouri. "Athletics Not Seriously Detrimental to Scholarship," *American Physical Education Review*, Vol. 32: 304 (April, 1927).
31. Worcester, D. A. "Effect of Outside Work upon Scholarship," *School and Society*, Vol. 18: 779–780 (December, 1923).

Studies in Secondary Schools

32. Beau, F. A. "The Mental Ability of Athletes in Comparison with Non-Athletes in High School," *American School Board Journal*, Vol. 73: 45, 155 (August, 1926).
33. Caldwell, Otis W., and Wellman, Beth. "Characteristics of School Leaders," *Journal of Educational Research*, Vol. 14: 1–13 (June, 1926).
34. Cook, William A., and Thompson, Mabel. "Comparison of Letter Boys and

Non-Letter Boys in a City High School," *School Review*, Vol. 36: 350–8 (May, 1928).

35. Hall, Robert T. "How Athletes and Non-Athletes Compare in Mental Ability and in Educational Achievement," *American Physical Education Review*, Vol. 33: 388–89 (June, 1928).
36. Hull, J. D. "A Comparison of the Grades of Athletes and Non-Athletes," *American School Board Journal*, Vol. 69: 107–9 (August, 1924).
37. King, I. F. *A Study of Athletes and Non-Athletes in Several Southern Michigan High Schools*, Extra-Curricular Activities. Wilds, E. H.
38. La Rue, J. D. "Effect of Athletics on High School Scholarship," *American Schoolmaster*, Vol. 10: 166–69 (April, 1917).
39. Lindel, Albert L. "Correlation Between Class Work and Athletics," *Athletic Journal*, Vol. 5: 44–48 (November, 1924).
40. Rogers, Frederick Rand. *The Scholarship of Athletes*, Stanford University, California, 1922. (Thesis)
41. Swanson, A. M. "Effect on High School Scholarship of Pupil Participation in Extra-Curricular Activities," *School Review*, Vol. 32: 613–626 (October, 1924).

Posture Photography

A Photographic Device to Include the Plumb Line in the Individual Posture Picture

By Bertha H. Leonard
Instructor in Individual Gymnastics,
Physical Education Department for Women, Oberlin College

ONE OF the difficulties encountered by students in visualizing the antero-posterior deviations of their own posture has been their failure to imagine a definite plumb line or their inability to draw it in such a way that it bears a definite relationship to the various segments of the body. We have developed a method in the photography of posture in the Women's Department of Physical Education of Oberlin College which includes the straight line as an integral part of the posture picture. The inclusion of this plumb or gravity line as a part of the exposure of each photograph taken is accomplished by a very simple and inexpensive device. By means of this we are able, with no further effort than the development of the negative, to submit to the student-subject a fairly accurate idea of her own individual posture problem. As she studies this completed photograph, with the straight line as essential a part of the picture as her own posture profile, she can at once visualize her particular deviations from the (gravity line) normal. This posture picture is a part of the usual health examination given to each freshman girl on entrance to college and this device has been most helpful in making clear to the college girl at the beginning of her four-year course her needs in the maintenance of an upright posture.

An integral part of the freshman required work is a six-week course in "Health Fundamentals" or applied hygiene. During this time there is a follow-up study of all the hygiene needs of the student as revealed by her physical examination. Her own habitual posture with its deviations from the vertical is so clearly pictured in her posture photograph that usually her interest is immediately aroused and she becomes alert to make corrections during this six-week interval. Exercises and suggestions to improve posture then fall more readily on fertile ground.

At the end of the six weeks, a second photograph is taken. She is able in conference with the director of the group to see her improvements and to be stimulated to further efforts to maintain a more correct posture during her college course. We have found this highly individualized method of straight-line posture photography with its careful follow-up in health fundamental courses makes a strong appeal to the student's initiative. Thus a cooperation, spontaneous and eager, is secured from the student in contrast to the frequent indifference and protests so often encountered in the reaction of the student to her physical defects when they are presented to her in their more general aspects.

Our photographic equipment was built by the college carpenter at

a total cost of approximately $4.00. It consists of a framework of wood seven feet high by three feet wide. Around this framework nails have been placed at two-inch intervals, and over these white cords are strung vertically and horizontally, making a screen of two-inch squares behind which the student-subject stands.

In the center of the framework, a black elastic tape, one-half inch wide, is stretched tightly from top to bottom. This constitutes the plumb or gravity line in the completed photograph. Of course, it should be tested in the position in which it is to stand by a free or true plumb line.

Five feet from the bottom of the framework a one-eighth inch black tape is stretched horizontally. This acts as a visual gauge to indicate quickly to the examiner the approximate height of the student in the finished photograph.

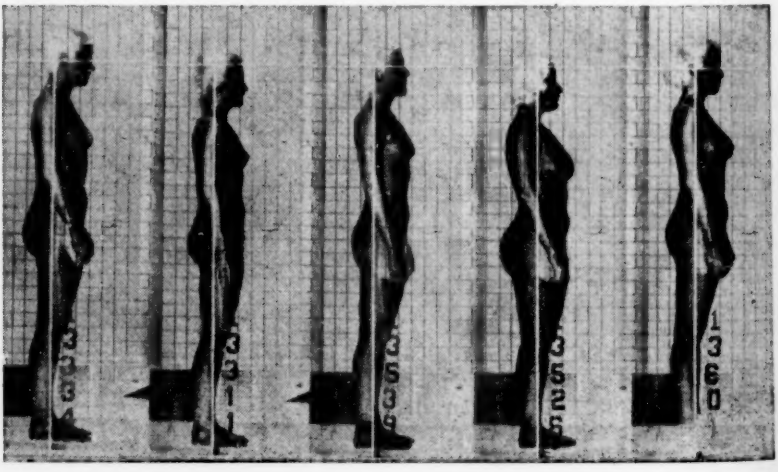
The student is placed, in profile, on a platform directly behind this photographic screen. The platform is of sufficient height to make the feet of the subject visible above the bottom of the screen. A line is marked on this platform for her feet so that the lower end of the plumb line of the screen will drop just in front of her ankle bone.

No further instructions are given except that the student is to look at an indicated object on the wall, so selected as to bring her gaze straight ahead. She then, presumably, assumes her natural posture and the photograph is taken.

We are using the usual photographic (Folmer Multiple) camera. Bromide contrast paper, size 5″ x 7″, is used instead of plates. Five pictures are taken on a sheet making the cost only a trifle over one cent each.

The developing is done by the instructor who takes the photograph. The usual black curtain is placed as a background for the screen.

When a back view is taken, the horizontal lines in the picture will clearly show the amount of unevenness in shoulders and hips.



Coordination Tests in Swimming

By Colin Theodore Wilson
Department of Applied Physics and Body Mechanics,
Springfield College
Springfield, Massachusetts

STATEMENT OF THE PROBLEM

Introduction.—Coordination in swimming has been the cause of many discussions. It is a term which is used by every swimming instructor repeatedly. Yet, it is suspected that most instructors have an inadequate conception of coordination as a complete problem. The physiologists are prone to investigation of the relationship of the nervous system to the problem, or the fundamental nature of muscle contraction. That the problem is a much broader one and involves the mechanics of the movement may be clearly shown.

In common usage swimming instructors have come to use the term *coordination* to mean a well controlled movement or the proper relative intertiming between phases of the stroke.

Definition.—As a working definition in the treatment of the problem of coordination in swimming in this thesis, coordination is defined as, "Proper movements, accurately controlled in direction, properly regulated in force, and intertimed in a sequential order for the most efficient action as willed by the performer."

From this definition it is clear that coordination in its practical aspects and as it can be measured, involves the fundamental elements of direction, force, and time. These quantities are the fundamental elements in any problem in mechanics. We are not concerned in this thesis with a contribution to the physiological phenomena explaining the origin, control, and propagation of the nerve force itself, but with the external manner in which this nerve force is manifested in movement.

Specific Objectives.—1. To outline how coordination is a fundamental problem of swimming instruction.

2. To compare and validate if possible several tests which have been suggested for measuring some of the practical aspects of coordination. In this connection our aim is to discover what valid tests can be used by instructors to measure how well an individual can coordinate the elements of the swimming strokes; also to suggest how improvement in swimming can be measured objectively.

What Is Meant by Coordination in Swimming.—The elements involved in coordination have been previously defined as being *direction, force,* and *time.* In the case of application to the swimming movements it may be made clear that the same elements must be considered to

explain the efficiency of any movement, irrespective of its simplicity.

Coordination in a Simple Swimming Movement.—For instance, let us consider the case of a single arm pull in the crawl stroke. It has been demonstrated that in the crawl stroke the most effective pull may be obtained when the pull is made directly beneath the body in the center line.[1] A very strong person may waste considerable effort and thus be ineffective in efficient progression. This example illustrates application of the first element of coordination; namely, *control* of *direction.*

Furthermore, regulation of force in the arm stroke is essential for efficiency. In a well coordinated stroke the hand enters the water relatively easily but the pull is increased during the phase of the arc where it will be most effective for propulsion. To slam the arm into the water or to apply maximum force at the wrong point of the pulling arc is a useless waste of effort, and will result in unnecessary fatigue and ineffective progress. This illustrates that the *force* must be controlled, i.e., regulated for maximum effectiveness in view of the aim.

There is still another condition to be fulfilled. For maximum effectiveness there must be a proper relationship in timing between the pulling and recovery phases of the stroke. For instance, the time that the arm is in the water is relatively longer than the time during recovery. It is desirable to apply force for the greatest length of time to produce momentum forward ($F\ t = M\ v$). To keep the arm suspended in the air for a longer time than necessary is useless because the arm weighs approximately eight pounds, and is dead weight, acting to sink the body lower in the water. Thus, it may be seen that *timing* of a movement is also important.

Coordination in Compound Movements.—In addition to the control of the elements already introduced in a single arm pull, it has been shown that the action of one arm is directly related to the other in efficient performance.

For instance, the spacing or timing of the arms in the cycle has a direct bearing on the efficiency of the stroke. That is, if even, continuous propulsion is a desirable goal, it is essential that the forward arm enter the water before the recovery arm has expended its forward propulsive force, a matter of timing, and thus be in position to continue the forward momentum without delay. If there is delay, a great deal of the effectiveness of each arm stroke is lost in an effort to overcome inertia between successive strokes.

The ability to maintain this spacing is related to the correct application of force to produce this result. In the single arm pull, control of the arm entering the water was fairly simple. But in the arm cycle the speed and time at which the arm enters the water is closely related to, and largely dependent on, the *final drive* of the opposite arm during recovery. This *final drive* during recovery swings the forward arm into

[1] T. K. Cureton, *Objective Tests of Swimming*, p. 154.

position to pick up immediately the momentum of the stroke. If the force expended in the arm action is not controlled to achieve this *final drive*, the arm cycle loses smoothness of action and results in a lunging movement.

Controlled direction for efficient performance in a single arm pull was stated as meaning that the pull be made directly beneath the body in the center line. In the arm cycle the ability to do this is dependent upon the path of the opposite arm during recovery. For example, if during recovery the arm is swung too far to the side, it tends to destroy the median line pull of the opposite arm, making the forward propulsion less effective.

In other words, the mechanical analysis of any particular movement in swimming, from the simplest phase to the composite stroke, may always be made in terms of the basic physical concepts of *direction, force,* and *time,* and such an analysis is identical with what is implied in the analysis of the mechanical aspects of coordination.

APPARATUS AND METHOD

Subjects.—The subjects were chosen as representative of a cross section of swimming ability. Tests were taken on a total of 60 men in the crawl stroke grouped as follows: 31 men comprising the varsity and freshman varsity teams at Springfield College (a group of good swimmers), 15 men from the sophomore physical class (an average group of swimmers), 14 men from the freshman secretarial class (a group of poor swimmers). Velocity tests were also taken on a total of 43 men in the breast stroke and 35 men in the back stroke. The total number of men tested was 138.

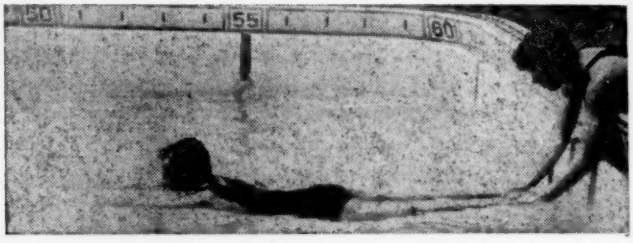
Methods.—The attempt has been to compare and validate if possible several tests which have been suggested for measuring some of the practical aspects of coordination.

1. *Land Drill Tests.*—In the land drill tests the number of controlled crawl movements, arms alone, legs alone, whole stroke, that the individual was able to perform in a given time were counted. Ten seconds was chosen as enabling the subject to obtain his maximum speed, and yet short enough to eliminate undue fatigue.

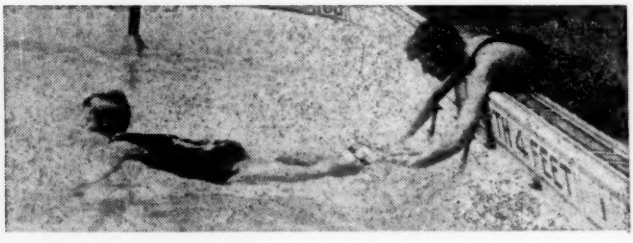
2. *Olson's Midget Bath.*—Tests were taken on Olson's Midget Bath to determine the number of movements the individual was able to perform in ten seconds, arms alone, legs alone, whole stroke.

3. *Suspension Tests.*—The subject was suspended from the end of the diving board by means of a strap around the body and sufficient tension kept on the strap to keep the subject in a good horizontal plane in the water. The number of movements the individual was able to perform in ten seconds, arms alone, legs alone, whole stroke, were counted. Two methods of observation were used; first by counting the movements from above, and second by the observer submerging directly under the swimmer to eliminate error in counting due to splash.

4. *Velocity Tests.*—The stop-watch method as discussed by Cureton[2] was used. In each case the swimmer started from a dead start and was timed one length of the pool, arms alone, legs alone, whole stroke.



Velocity Test (legs alone)



Velocity Test (arms alone)

Immobilization of legs—velocity tests.

Validity:

***a*) Mechanical validation of the formula:**

Total speed = arm speed + leg speed — (Loss *RC*)

[2] T. K. Cureton, *Op. cit.*, p. 141.

Two motors, analogous to the arms and legs, were attached to the rear of a small boat. In a series of trials the mean speed of both motors was 20.2 sec.; mean speed front motor 24.5 sec.; mean speed rear motor 39.0 sec.

Applying the same mechanical principle to swimming, the forward propulsive power of the legs, although less than that of the arms, actually increases the total speed.

b) Consistency of the velocity tests:

The tests were repeated six times on successive days on two subjects.

CASE 1

Time Whole Stroke		*Time Legs*		*Time Arms*	
Mean speed	= 10.36 (sec.)	Mean speed	= 16.95 (sec.)	Mean speed	= 12.4 (sec.)
a. d.	= .166	*a. d.*	= .30	*a. d.*	= .23
A D	= .067	*A D*	= .122	*A D*	= .093

CASE 2

Time Whole Stroke		*Time Legs*		*Time Arms*	
Mean speed	= 10.86 (sec.)	Mean speed	= 21.06 (sec.)	Mean speed	= 12.6 (sec.)
a. d.	= .18	*a. d.*	= .20	*a. d.*	= .33
A D	= .073	*A D*	= .081	*A D*	= .134

The velocity tests are highly consistent. In each instance the mean is many times larger than the *A D.*

RESULTS

The results of the experiments are summed up in the following tables.

TABLE OF ZERO-ORDER CORRELATIONS

Items 1. Crawl Stroke	*r*	*P.E.*
(1) Number strokes Land Drill with number strokes suspension	.209	± .067
(2) Number strokes Olson's Midget Bath with number strokes suspension	—.105	±.101
(3) RC Loss Velocity with per cent Loss Land Drill (60 cases)	—.105	±.074
(4) RC Loss Velocity with per cent Loss Land Drill (31 varsity cases)	.010	±.114
(5) RC Loss Velocity with per cent Loss Suspension (60 cases)	.063	±.068
(6) RC Loss Velocity with per cent Loss Olson's Midget Bath (60 cases)	—.031	±.086
(7) Coordination Loss Velocity with per cent Loss Land Drill (31 varsity cases)	.313	±.011
(8) Coordination Loss Velocity with per cent Loss Suspension (31 varsity cases)	.105	±.119
(9) Coordination Loss Velocity with per cent Loss Olson's Bath (31 varsity cases)	.240	±.14
(10) Coordination Loss Velocity with per cent Loss Land Drill (29 average cases)	.105	± .123
(11) Number strokes (whole stroke) with number beats (whole stroke)	.199	±.067
(12) Number strokes (alone) with number beats (alone)	.094	±.120
(13) Velocity (whole stroke) with number strokes (31 varsity cases)	.199	±.116

(14) Velocity (whole stroke) with number beats (31 varsity cases)	.094	±.120
(15) Velocity (arms alone) with number strokes (31 varsity cases)	.251	±.113
(16) Velocity (legs alone) with number beats (31 varsity cases)	—.813	±.040
(17) Velocity (legs alone) with Velocity (arms alone) (31 varsity cases)	.09	±.115
(18) Velocity (legs alone) with Velocity (arms alone) (60 cases)	.568	±.058
(19) Velocity (legs alone) with Velocity (arms alone) (29 average cases)	.497	±.092
(20) Velocity (whole stroke) with RC Loss (31 cases)	.094	±.125
(21) Velocity (whole stroke) with RC Loss due to (arms) (31 varsity cases)	.008	±.120
(22) Velocity (whole stroke) with RC Loss due to (legs) (31 varsity cases)	.063	±.120
(23) Velocity (whole stroke) with Loss due to Resistance (31 varsity cases)	.282	±.112
(24) Velocity (whole stroke) with Loss due to Resistance (60 cases)	.46	±.07
(25) Velocity (whole stroke) with Loss due to Resistance (29 average cases)	.251	±.116
(26) Velocity (whole stroke) with pure coordination Loss (31 varsity cases)	.042	±.067
(27) Velocity (whole stroke) with pure coordination Loss (29 average cases)	—.105	±.123
(28) Velocity (whole stroke) with Velocity (legs alone) (60 cases crawl)	.697	±.044
(29) Velocity (whole stroke) with Velocity (arms alone) (60 cases crawl)	.833	±.026
2. Breast Stroke		
(30) Velocity (whole stroke) with Velocity (legs alone) (41 cases breast)	.852	±.028
(31) Velocity (whole stroke) with Velocity (arms alone) (41 cases breast)	.717	±.050
3. Back Stroke		
(32) Velocity (whole stroke) with Velocity (legs alone) (35 cases back stroke)	.598	±.074
(33) Velocity (whole stroke) with Velocity (arms alone) (35 cases back stroke)	.687	±.060

TABLE OF PARTIAL CORRELATIONS

Key

r_1 = whole speed
r_2 = arm speed
r_3 = leg speed
r_4 = resistance

	Partial Coefficients
1. Crawl Stroke 3 Variables	
	$r_{12.3} = .729$
	$r_{13.2} = .529$
	$r_{23.1} = -.031$
2. Crawl Stroke 4 Variables	
	$r_{12.34} = .784$
	$r_{13.24} = .767$
	$r_{14.23} = .672$
3. Breast Stroke 3 Variables	
	$r_{12.3} = .780$
	$r_{13.2} = .883$
	$r_{23.1} = -.575$

4. Back Stroke
   3 Variables

$$r_{12.3} = .635$$
$$r_{13.2} = .520$$
$$r_{23.1} = -.093$$

TABLE OF MULTIPLE CORRELATIONS

Key

r_1 = whole speed
r_2 = arm speed
r_3 = leg speed
r_4 = resistance

	Multiple R	*Validity of R*
1. Crawl Stroke—3 Variables	$R_1(23) = .883$	$\pm .18$
2. Crawl Stroke—4 Variables	$R_1(234) = .994$	$\pm .18$
3. Breast Stroke—3 Variables	$R_1(23) = .943$	$\pm .22$
4. Back Stroke—3 Variables	$R_1(23) = .785$	$\pm .23$

TABLE OF PREDICTION EQUATIONS

Key

X_1 = total speed
X_2 = arm speed
X_3 = leg speed
X_4 = resistance

1. Crawl Stroke—3 Variables
   $X_1 = .343\ X_2 + .106\ X_3 + 5.16$
2. Crawl Stroke—4 Variables
   $X_1 = .37\ X_2 + .18\ X_3 - .19\ X_4 + 4.19$
3. Breast Stroke—3 Variables
   $X_1 = .265\ X_2 + .131\ X + 8.68$
4. Back Stroke—3 Variables
   $X_1 = .52\ X_2 + .18\ X_3 + 1.35$

DISCUSSION

Reliability of Tests.—The results have shown that the land drill tests, suspension tests, and tests on Olson's Midget Bath are not reliable as a means of determining coordinative ability in actual swimming performance. Performance in the tests is not related to the speed criterion.

The velocity tests give high correlations with swimming performance, and are of practical value.

The consistency of performance in the velocity tests was remarkable, stressing the accuracy with which a swimmer repeats his performance in a series of trials.

Contribution of the Legs and Arms in Total Speed.—A good deal of speculation has been rife in the swimming world as to the proportion in which the arms and legs contribute to total speed. A good many theories have been advanced, based entirely on personal opinion without objective data.

1. Contribution of Legs and Arms Crawl Stroke
   Total speed = .62 arm speed + .36 leg speed
2. Contribution of Legs and Arms Breast Stroke
   Total speed = .446 arm speed + .675 leg speed
3. Contribution of Legs and Arms Back Stroke
   Total speed = .544 arm speed + .4 leg speed

Analysis of Speed Performance.—The term RC Loss has been used throughout to denote the loss in efficiency which results when the separate movements (arms, legs) of the crawl stroke are combined into the composite stroke.

The separation of this total loss into its constituent parts is a complex problem. The results tend to show that this loss is due to three factors:

1. Resistance Loss.—The resistance to a body moving through the water increases at faster speeds.

2. Pure Coordination Loss.—Pure coordination loss is a neurological loss.

3. Loss Due to Slip.—A swimmer moving at faster speed increases the flow of water under his body, and this has the effect of increasing the slip, which results in a loss in efficiency.

Velocity Tests of Practical Importance.—Velocity tests offer the coach the most objective method of stroke analysis. The efficiency of each phase of the stroke may thus be determined. The average per cent error in predicting the true time for fifteen men in the crawl stroke, knowing the speed of the arms alone and the speed of the legs alone was 7.2 per cent, thus stressing the importance of the velocity tests.

Curriculum Content and Suitable Minors

By MABEL E. RUGEN, Ph.D.
Assistant Professor of Physical Education, University of Michigan, Ann Arbor, Michigan

STATEMENT OF THE PROBLEM

THE PRESENT unemployment of teachers has created demands for better preparation of teachers.* Better preparation has raised the question of desirable teaching combinations. In recent years a large percentage—in some instances nearly 50 per cent—of the beginning teachers of academic subjects in the secondary schools have been teaching subjects other than their majors or minors. Likewise in the field of physical education, teachers are attempting to teach two, three, four, and even five subjects in addition to physical education. It is obvious that such conditions do not make for efficient instruction in our schools, nor do they help to raise the standards of general secondary education.

Not so many years ago we deplored the lack of college graduates in our teaching ranks. We demanded high certification standards. We said our boys and girls should be taught by "educated" men and women. Normal schools became teachers' colleges. Liberal arts colleges became teacher-training institutions. Universities developed teachers' colleges and schools of education. While the rate of growth previous to 1917 was relatively slow, it has since been very rapid until unceremoniously halted by the depression in 1929. Still in 1933, the American Association of Teachers' Colleges recognized over one hundred and fifty accredited teachers' colleges, offering at least one four-year modified curriculum of post high school work.†[1] In the field of physical education, over three hundred teacher-training institutions have been reported as offering professional training leading to the baccalaureate degree.[2]

Despite this, however, as recently as April, 1930, "it was reported that there were three available positions in physical education for every one teacher prepared to fill them."[3] The problem, of course, has been to find the positions. As budgets have been cut and personnel reduced, the tendency has been to employ less "specialized" teachers and to add the specialities to the teaching burden of teachers of regular academic subjects. When this has been thought unwise many of the specialities have been eliminated. Possibly part of this has been due to the fact that in the field of physical education emphasis has been placed entirely on the major and not on teaching majors and minors, as has been the case in the academic subjects.

---

* A paper presented before the Teacher-Training Section of the Mid-West District Convention, April, 1934, at Cleveland, Ohio.

† Numbers refer to bibliographical references at end of article.

Recent studies in physical education have investigated the teaching combinations of physical education teachers in secondary schools. Implications from some of these studies are that the professional training in physical education should be revised to meet the demands of the field. Our students should be prepared to teach mathematics, social studies, science, home economics, art, music, English, Latin, and practically every other subject in the high school curriculum. But shall such revision of the physical education curriculum be made without a consideration of logical teaching combinations, and the ability and interests of students in the teaching combinations?

In a survey of the literature in the field of general education two viewpoints have been expressed: (1) that preparation in subject matter combinations in the teachers' college be based upon subject combinations taught at the present time in the field, and (2) that preparation in subject matter combinations be based on the relationship of abilities demanded by the various subjects and on the determination of logical teaching sequences. Each of these viewpoints is discussed.

TEACHING COMBINATIONS DEMANDED IN THE FIELD

Interest in teaching combinations has been associated with studies of supply and demand for teachers.[4] Buckingham, in investigating teacher supply and demand in Ohio in 1923–24, concluded that newly appointed high school teachers very frequently did not teach the subjects in which they had majored or minored in college.[5] This finding was supported by Paterson who learned in 1925 that more than 50 per cent of the graduates of the Colorado State Teachers College at Greeley were teaching outside their field of specialization.[6] Kemp reported an investigation of 486 teachers (1922–23 graduates of the University of California) which showed that over one-third the subjects taught were those in which the teachers had had little or no training. In small high schools the number of subjects taught outside of the major or minors mounted to over one-half, while in the larger high schools only about one-fourth.[7]

Baer in a later study of Ohio stated that about one-fifth the teachers taught subjects in which they had neither majored nor minored.[8] Cole[6] in North Dakota, Inman[6] in Iowa, and Lignon,[6] investigating conditions in the South, all came to the same conclusion; namely, that there was considerable discrepancy between the subjects taught and those in which the teacher had majored or minored in college. The same situation was revealed in the field of primary, elementary, and rural education.[9] Reasonable teaching combinations did not exist. Teachers just taught anything and everything which was demanded. A recent survey of the Association of Colleges and Secondary Schools of the Southern States showed mathematics and social science and English to be combined with every other subject. The most popular combinations with English were French, Latin, Spanish, social science, and mathematics. Civics, usually required

in secondary schools, was taught by teachers with little or no preparation.[10] What of physical education?

In a survey of the North Central Association of High Schools of Michigan, Woody[11] found (1924–25) that of 147 teachers of physical education, 53 per cent were teaching physical education alone, 12 per cent were combining it with two or more other subjects. Subjects most frequently combined were mathematics, history, and social studies. A later study[12] (1933) of class *B* and *C* high schools in Michigan, however, showed that of 189 men teachers of physical education only 39, or less than 20 per cent, were teaching physical education alone. The remaining 150 were teaching physical education in combination with 1 to 7 other subjects. Physical education and industrial arts was the most frequently mentioned 2-subject combination. The 189 teachers of physical education were teaching 94 different combinations. Eighty-six of these different combinations were taught by 86 different teachers, i.e., each of the 86 combinations occurred only once. Nineteen different combinations were taught by 2 or more of the teachers of physical education. Subjects most frequently taught, excepting the physical education–industrial arts combination, were science which was mentioned 84 times, and social studies which was mentioned 83 times. Mathematics ranked a close third. Of the social studies, history was by far the most frequent individual subject, while geometry was the most popular mathematics. Physics and biology led in the field of science. It is also interesting to note that of the 189 teachers of physical education only 49.8 per cent had either majored or minored in physical education.

A questionnaire survey of girls' basketball in the state of Michigan[13] (1932–33) revealed forty women teachers of physical education out of ninety-two replying who were teaching other subjects. English was the most frequent combination; elementary grades ranked second; home economics, physiology, biology, health, history, mathematics, hygiene, and general science were all included.

Similar situations exist elsewhere. Street[14] found that in Iowa and Kansas the most frequently combined subjects with physical education were for men: biology–physiology, health–hygiene, history–social sciences, mathematics, chemistry–physics, and industrial arts. For women the most frequent combinations were with: health–hygiene, biology–physiology, history–social sciences, music, home economics, English, and public speaking. Street recommended that certification standards should be such that teachers will be required to have a reasonable degree of preparation for all subjects which they teach. He maintained also that continuous study be made in all states of the various problems relating to supply and demand, so as to produce a better balance between the teacher–preparation programs and the needs of the public schools.

According to Horton[15] data collected from 674 positions in Illinois, distributed over the state exclusive of Chicago, the best teaching com-

binations for men teachers of physical education are science and mathematics. Women teachers of physical education in Illinois most frequently teach in combination English, Latin, home economics, history–social science, mathematics, and science. In addition to mathematics and science which are recommended as the best teaching combinations for men, history–social science, and manual arts are also taught.

In Indiana[16] it is only in the large high schools (over six hundred) that a full-time teacher of physical and health education is found. In high schools of two to six hundred enrollment physical education teachers usually teach one additional subject, and in schools with less than two hundred enrollment they usually teach two additional subjects. For men, social studies is by far the most common combination. Science, mathematics, and industrial arts follow in the order named. Among the women, English seems to be the most common combination with home economics, science, and foreign language following in the order named.

Andreas[17] reported that interviews with fifty-two high school principals and superintendents in central New York state showed a preference for teachers of physical education who could also teach an academic subject. The experience of Syracuse University, likewise reported by Andreas, indicated a preference for teachers of physical education in combination with social science, business education, mathematics, science, and history.

Whitney and Milholland [19] reporting frequent teaching combinations with various subjects in two or more investigations found the most frequent combinations of physical education for men to be history, industrial arts, and mathematics. For women the most frequent combinations were history and English.

From these studies it is apparent that certain teaching combinations seem to appear more frequently than others. These teaching combinations differ for men and women teachers. The following table gives this summary.

The subject combinations of greatest frequency according to this table are for men: science in Illinois; biology and physiology in Iowa and Kansas; industrial arts in Michigan; and social studies in Indiana. Second in frequency is mathematics in Illinois; health–hygiene in Iowa and Kansas; science—chiefly physics and biology in Michigan; and science in Indiana. The third subject in frequency seems to be social studies, chiefly history in Iowa and Kansas and Michigan, and mathematics in Indiana. The subject combinations for the women, on the other hand, are: English in Michigan and Indiana and health–hygiene in Iowa and Kansas as first in frequency. Second place goes to elementary grades in Michigan, biology–physiology in Iowa and Kansas, and home economics in Indiana. The subject mentioned third in frequency is home economics in Michigan, social studies, chiefly history, in Iowa and Kansas, and science in Indiana. Teaching of science, social studies,

TABLE I

TEACHING COMBINATIONS WITH PHYSICAL EDUCATION RANKED IN ORDER OF FREQUENCY IN VARIOUS STUDIES ON "TEACHING COMBINATIONS"

Investigator and State Studied	*Subject Combinations*																						
	Science									*Social Science*		*Mathematics*		*Languages*									
	Sci.	Physics	Chem.	Gen'l Sci.	Biol	Physiology	Health Hygiene	Social Studies	Hist.	Math.	Geometry	English	Public Speak.	Latin	Foreign Lang.	Ind. Arts	Home Ec.	Bus. Ed.	Music	Elem. Grades
	M W	M W	M W	M W	M W	M W	M W	M W	M W	M W	M W	M W	M W	M W	M W	M W	M W	M W	M W	M W
Michigan																				
Woody (1924–25)								3	2	1										
Coombs (1933)	2	2			2			3	3	4	4					1				
Basketball Survey (1932–33)				V	V	V	V		V	V		1					3			2
Iowa and Kansas																				
Street (1932–33)		5	5		1 2	1 2	2 1	3 3	3 3	4		6	7			6	5		4	
Illinois																				
Horton (1933)	1							V V	V V	2 V		V		V		V	V			
Indiana																				
Moore (1933)	2 3							1		3		1			5	4	2			
New York																				
Andreas (1933)	4							1	5	3								2		
Whitney and Milholland									1 1	3			2			2				

NOTE: A check (V) indicates that rank was not given. Where two subjects have the same ranking—as social studies and history—interpret social studies, meaning mostly history; where the number appears between the column M and W, it means the author of the study did not state definitely whether it was a survey of men or women teachers of physical education.

English, mathematics, home economics, and industrial arts seem to be most frequently demanded of physical educators.

Shall the teachers' colleges adjust the physical education curriculum to meet the demands in the specific state in which the college is located? If so, what further adjustments will be made to accommodate the students from neighboring states where subject combinations demanded are different? If the demands of the field were to be the only criteria for the adjustment of the curriculum, it is apparent that endless confusion would result. What guarantee is there, for example, to assure the teachers' college that the demands of 1934 will be the demands of 1939? To adopt the policy of determining subject combinations for physical education in terms of the demands of the field with its literal interpretation, is to admit that state certification laws are perfect and that judgment of school administrators in selecting a candidate is based on the subject-matter preparation in majors and minors. Both of these statements can be challenged, since one of the existing difficulties in solving the problem of supply and demand is our inadequate certification laws in many states, and the lack of attention school administrators pay to subject-matter preparation of their prospective teachers. There is a great need for closer cooperation among the state certificating bodies, the school administrators, and the teachers' college.[18]

LOGICAL TEACHING COMBINATIONS

West Virginia represents one state which has attempted to solve its problems of supply and demand and teaching combination through cooperative planning. A recent state-wide cooperative study in which the high school principals committed themselves as to the best teaching combinations for their schools, and in which the teachers' colleges and state certificating bodies have utilized these suggestions in making more effective their services, has done much towards contributing to the determination of better teaching combinations. As a result of this study, high school teachers in the academic subjects are expected to have a first and second teaching field. These teaching fields must be selected from an approved list of teaching combinations. The number of hours of credit for certification in any subject is specified by the state. All teachers are required to have twenty semester hours in secondary education.[20] To be sure, the question has been raised as to whether or not the student always makes the best selection for his second teaching field, but this is a question which will always be present. How can we ever guarantee the choices of any one or of anything to be the best ones?

Whitney and Milholland,[21] studying the problem of teaching combinations in Colorado, state that since there is so little evidence of any tendency to combine certain definite subjects as minors with certain majors, there is a need to adjust theory and practice. The modern

teachers' college has assumed that specific subject–matter preparation is a large factor in successful teaching. "Practice (however) seems to indicate that public school administrators consider the qualitative aspect of preparation of little importance. It may be that the hypothesis implied in this latter attitude is correct and that the teachers' college should devote itself entirely to preparation in philosophy of education, psychology, methods, and the like."[22]

This latter point of view, however, is definitely opposed by the Committee on Required Courses in Education of the American Association of University Professors.[23] Their ". . . report shows wide spread opposition to the undue emphasis placed in many states and schools on technical professional training as compared with training in the subject matter to be taught." The Committee endorses courses in practice teaching, methods, and educational psychology. Further technical courses are unnecessary because ". . . the various courses contain much material which should be obvious to any one capable of becoming a teacher. They are often diluted in content and show much overlapping and duplication; they have not been proved to develop more effective teachers."[24]

Whitney and Milholland suggest further that improved correspondence between college preparation and subjects taught can be realized when teachers are allowed to teach only the subjects for which they are prepared. If teachers' colleges were backed by adequate certification laws they should be better able to standardize teaching combinations based on (1) the relationship between abilities to teach various subjects and (2) the relative frequency with which the different subjects are taught in the schools.[25]

This point of view is also supported by the Southern Association of Secondary Schools and Colleges[26] as a result of their study of teaching combinations of which a brief summary is here given.

"The evidence of this study seems to indicate that the teaching combinations have been selected for convenience in administration and not for any relationship that may have existed between the subjects. This method of selecting the combinations is not calculated to encourage scholarship in special fields of subject matter. The principals of the secondary schools of the several states with the help of the high school inspectors should be encouraged to study this problem and work out combinations better adapted to the needs of the schools. . . .

"The academic training of . . . teachers as indicated in this report represents a 'weird mixture' of a great many subjects with very little sequence. Prospective high school teachers should be guided in their selection of academic studies in such a way that their majors and minors will be in related fields and that the divisions of these subjects will be in sequence. It is important also that the elective subjects be selected in such a way as to give vision and breadth of understanding for future growth. . . .

"The assignment of teachers to teach combinations of subjects, the training of teachers to teach these combinations and the certification of teachers to the subjects are parts of the big problem of efficient classroom instruction. The state could say that Latin, French, and Spanish constituted a combination. It could instruct the

colleges to train the language teachers for this combination. The state could certificate these trained teachers to teach these subjects. If all of these things were done for all subjects taught in the high school the millenium in high school teaching would be here."

Preparation in at least two related teaching fields[27] with emphasis on specific subject matter, and a limited number of hours in technical professional subject matter,[28] with due consideration given to a broad training, seem to be the trends in the field of general teacher education. Davis[29] has summarized this trend very nicely in his recent survey of academic majors and minors in thirty-one universities and colleges in the North Central territory.

"It seems very evident from all these facts and opinions that some notable changes in the requirements of majors and minors are about to be made in many sections of the country. Specifically, the trend seems to be toward broader training in fields *directly related* to the teacher's department of specialization, and in consequence an increase in the number of semester hours allotted to the whole division of concentration. Thus, history as a major or minor is not to be acceptable, but in its stead a group of social subjects is to be required. Likewise physics or chemistry standing alone will not serve as a major but both in combination. In a similar way groupings of other related subjects are to be set up and students will be permitted to select from among the groupings.

"A second trend, and one growing out of the first set of modified requirements, is one looking to the establishment of a five-year course for the training of all secondary teachers."[30]

What do all of these proposals mean for physical education? The five-year plan of teacher training has been discussed for a number of years. If there has not been adequate time in a four-year curriculum to prepare students to teach physical education, then how in the course of these same four years can we hope to prepare students to meet the various demands of teaching combinations as made by school administrators? It is well to recall here that the study of Coombs showed that eighty-six men teachers of physical education in Michigan were teaching eighty-six different combinations of academic subjects.[31]

RECOMMENDATIONS FOR PHYSICAL EDUCATION

In recommending a procedure for determining the best subjects or teaching combinations for students of physical education, the results of the various studies cited must be taken into consideration. Conclusions from these studies would indicate that:

1. At least two teaching fields are desirable; a major in physical education and a minor or major in an academic field. When possible it would be well to extend this to three teaching fields; a major in physical education and a first and second minor—possibly one a *group* minor and the other a *subject* minor.

2. The teaching fields should be related. Furthermore, students should be required to select for additional majors or minors only subjects or fields of concentration which are taught in the modern high school. Such teaching combinations as Greek, archeology, bacteriology, or psychology should be discouraged.

3. Related fields of concentration to physical education for which there seems

to be some demand are science—preferably the biological sciences—and social studies. These fields should be given first consideration in the development of a second major or minor.

4. Some consideration should be given to special interests of individual students in the selection of teaching combinations. Where two minors are required, it seems desirable to allow the second minor to be in the field or subject of greatest interest to the student, provided it is in a field of study which is included in the high school. This would give recognition to special interests in English, dramatics, foreign languages, industrial arts, or mathematics.

5. Cooperative studies should be undertaken which include high school principals in the various states, state certification bodies, schools of education of universities, and accredited teachers' colleges toward the end of developing standard policies regarding best teaching combinations in physical education. Specific teaching combinations could then be set up by the teachers' colleges which would be recognized for certification and which the school administrators would take into consideration in the employment of new teachers.

DISCUSSION

Twenty-six of the thirty-one universities and teachers' colleges in the North Central territory studied by Davis require both an academic major and minor for prospective teachers of academic subjects.[32]

In the academic fields majors and minors are pretty well defined both as to number of hours and specific courses. Such courses as special methods in the teaching of—let us say—algebra or English are sometimes counted towards the academic major. Otherwise, courses are quite definitely related to subject matter as such. Seldom are technical courses in education allowed to count toward the academic major.

The number of hours required for the major varies in the Davis[33] study from twenty-four to forty. The number of hours required in the universities is higher than in the liberal arts colleges and teachers' colleges. The number of semester hours required for a minor ranges from fifteen to thirty with many schools not giving the specific number. This would indicate that academic minors are less firmly established.

The study of Peik[34] of twenty-nine universities and twenty-eight liberal arts colleges training teachers and representing all parts of the country, gave a median of twenty-seven semester hours for the academic major and thirty-six semester hours for the special subjects. The median hours for the first academic minor was sixteen semester hours, and for the second academic minor thirteen semester hours. Only 30 per cent of the special majors specified any minors. This study also recommended the development of general or group majors, cutting across departmental barriers.

A similar study of sixty-six teachers' colleges, at least one from each state, made by Rugg[35] gave an average of twenty-five semester hours for the major in all types of four-year curricula. Physical education was included among the ten curricula requiring the highest number of semester hours. Thirty-one semester hours was the average for this group. The first minor in this study gave an average of seventeen

semester hours while the second minor gave an average of twelve semester hours.

Could the physical education major be set up within the limit of thirty to forty semester hours? This could probably be done if only the subject matter pertaining directly to physical education were included. What, then, would happen to the sciences we have emphasized so much as our fundamental background? Either these sciences could be required as prerequisites to the major in physical education, or they could be reorganized around the idea of a group major or minor in science and made a required second teaching field for the student of physical education. Whether the science major or minor should be called biological science, physical science, or natural science would, of course, vary somewhat with the different universities and colleges.

The University of Michigan has group majors in physical and biological sciences which range from thirty-two to thirty-eight semester hours. There is also a group major in general science of thirty-two semester hours, and in social studies of thirty-eight hours. English likewise has a group major of thirty-five hours. Other universities are developing the group major idea. According to Davis,[36] Wisconsin is working in group majors in general science and social studies. Minnesota has completed arrangements for a group major in natural science; Iowa, Ohio, and Missouri all have group majors in two or more fields of interest.

With thirty-five or forty semester hours required in the field of physical education (a group major) it might still be possible to acquire a group major or minor in the field of science ranging in semester hours from twenty to forty. The technical courses in education of twelve to eighteen hours as required by various state laws could be required for the teacher's certificate. There would still be room in the program for a second minor in a field of special interest to the student or for broad election.

The development of such a program would entail considerable cooperative effort in individual colleges and universities. This type of planning, however, would seem to be more effective in the future. Perhaps we should beware of piece-meal planning to meet an immediate situation just for the sake of placing our graduates.

It is true that we must, to a certain extent, recognize present demands from the field for teaching combinations. Attempting to meet the demands, however, is not a solution to the problem of suitable minors in physical education. The trend in the field of general teacher education is to develop teaching combinations around related subjects within the secondary school curriculum. We in physical education can profit by this trend. A re-examination of our present curriculum content towards the end of improving our in-service training in a logical and practical manner must result in cooperative and long-time planning.

Professional standards, which must include an emphasis on specific subject-matter preparation, must be maintained.

BIBLIOGRAPHY

[1] Ade, Lester. "The Teachers' College Movement," *Journal of Education,* CXVII: 1 (Jan., 1934), 8–9.

[2] *U. S. Bureau of Education Bulletin* (July, 1928).

[3] Scott, Harry. "Essentials in Teacher Training," *Journal of Health and Physical Education,* I:4 (Apr., 1930), 10.

[4] See *Research Bulletin of the National Education Association,* "Teacher Demand and Supply," IX: 5 (Nov., 1931).

[5] Buckingham, B. R. *Supply and Demand in Teacher Training,* Ohio State University, 1926.

[6] Reported in *Research Bulletin of N.E.A.,* "Teacher Demand and Supply," IX: 5 (Nov., 1931), 380–381.

[7] Kemp, W. W. "Training of High School Teachers in Relation to the Subjects They Teach," *Calif. Quarterly of Secondary Education,* I:4 (June, 1926), 406–12.

[8] Reported in U. S. Bulletin No. 10, "Selected Bibliography on the Education of Teachers." Vol. I of *National Survey of the Education of Teachers.*

[9] Rhodes, Earl N. "The Extent to Which Graduates from Different Curricula of Teachers' Colleges Teach in Their Specialized Fields." *Ed. Adm. and Sup.,* XV:9 (Dec., 1929), 667–677.

[10] Lignon, M. E., Mitchell, J. S., *et al. Training of High School Teachers.* Pp. 58–59. Birmingham, Ala.: Ass'n of Colleges and Secondary Schools of the Southern States, 1921.

[11] Woody, Clifford. "Number and Combinations of Subjects Taught in the 1924–25 School Year in North Central High Schools of Michigan," *Ed. Adm. and Sup.,* XII (Nov., 1926), 529–48.

[12] Coombs, Ralph. Subject Combinations Taught by Men Physical Education Teachers in Class *B* and *C* High Schools of Michigan, Master of Arts Thesis, University of Michigan, 1933.

[13] Survey conducted by Laurie Campbell, State Basketball Chairman.

[14] Street, Claude W. "A Study of Suitable Majors and Minors that are Used in Combination with Physical Education," RESEARCH QUARTERLY, 4:3 (Oct., 1933).

[15] Horton, Clifford E. "A Report on Teaching Combinations in Physical Education in the High Schools of Illinois for Men and Women," RESEARCH QUARTERLY. 4:3 (Oct., 1933).

[16] Moore, H. E. "A Study of Subjects Taught by 1037 Teachers of Health and Physical Education in the Public High Schools of Indiana," RESEARCH QUARTERLY, 4:3 (Oct., 1933).

[17] Andreas, Lewis P. "Double-Major Programs in Teacher Training in Physical Education," RESEARCH QUARTERLY, 4:1 (March, 1933).

[18] Lignon, M. E., Mitchell, J. S. *et al. Op. cit.,* p. 59.

[19] Whitney, F. L., and Milholland, John. "The Relationship of Teachers' College Preparation to Subjects Taught After Graduation," *School and Society,* XXXVII:956 (Apr. 22, 1933), 533–536.

[20] Shouse, J. B. "A Possible Effect of Prescribing Subject Combinations for Teachers," *Ed. Adm. and Sup.,* XVIII:2 (Feb., 1932), 133–36.

[21] Whitney, F. L. and Milholland, John. *Op. cit.,* p. 536.

[22] Recommendations of the Committee on Required Courses in Education of the American Association of University Professors (1933). Reported in *School and Society,* XXXVII:954 (Apr. 8, 1933), 453.

[23] *Ibid.*

[24] Whitney, F. L. and Milholland, John. *Op. cit.*

[25] Lignon, M. E., Mitchell, J. S., *et al. Op. cit.*, p. 59–60.

[26] Whitney and Milholland, *op. cit.*, suggest four teaching fields as the maximum while other writers suggest three teaching fields, a major and first and second minor.

[27] The Committee on Required Courses in Education of the American Association of University Professors, *op. cit.*, suggest twelve hours.

[28] Davis, C. O. "Academic Majors and Minors," *North Central Association Quarterly*, VIII:3 (Jan., 1934), 373–392.

[29] *Ibid*, p. 392.

[30] Coombs, Ralph. *Op. cit.*

[31] Davis, C. O. *Op. cit.*, p. 374.

[32] *Ibid*, p. 379.

[33] Peik, W. E. "Courses for High School Teachers That Universities and Colleges Require, and the Problems Thereof." *School Life*, XVIII:4 (Dec., 1933), 71.

[34] Rugg, Earle W. "What Teachers' Colleges Teach," *School Life*, XVIII:3 (Nov., 1933), 54.

[35] Davis, C. O. *Op. cit.*, p. 376.

A Comparison of the Subject Elections and the Scholastic Records of Athletes and Non-Athletes

By Harmon S. Jones,

Director of Physical Education,
Union High School, Grand Rapids, Michigan

INTRODUCTION

IT HAS frequently been charged that high school athletes tend to elect less difficult subjects and lighter subject loads than the non-athletes, and also that they receive lower scholastic grades in the subjects elected.* For the past few years it seems to have been the consensus of opinion of educators, as well as the general public, that athletes, because they had competition in interscholastic sports in mind, have had a tendency to elect subjects that are often rated as easy. This may be true, but the opinion of most persons is based only on supposition and not facts. It is probable that this viewpoint was developed by judging all athletes by a few star performers on the school athletic teams. This study was undertaken, therefore, as an attempt to throw some light on the above charges.

The problem thus undertaken was to make a comparison of the subject elections and the scholastic records of the athletes and non-athletes at Union High School, Grand Rapids, Michigan, for the years 1930-31 and 1931-32. The study has covered all the records of the athletes and the non-athletes from this school and by the use of these records, which were on file in the office of the school, the comparison was made of the subject elections and scholastic grades.

By obtaining the above information this study has a present significance, in that it may be of some value to the principal, session room teachers, classroom teachers, and the coaches of the athletic teams, not only in this one high school but others as well. Principals may receive some suggestions that might be of an administrative assistance by helping them to know what subjects the boys tend to elect and also the distribution of grades in each subject.

This study and the results are confined to the male students alone. The first step was to make a distinction between the athletes and the non-athletes and the definitions arrived at were the ones set up by the

* An abstract of a thesis submitted in partial fulfillment of the requirements for the degree of Master of Science at the University of Michigan, 1933.

Carnegie Foundation[1] in their study at Columbia University in 1927.

"An *athlete* is a male undergraduate mentioned in the school yearbook as having been a member of the university or freshman team or crew, even if he was not awarded an insignia."

"A *non-athlete* is any other male member of the group."

Managers of the athletic teams were not considered as athletes unless they actually took part in some sport. The above definitions were varied slightly to meet the needs of this study of high school students, otherwise they were used under the same provisions. The 2 groups were selected from the high school yearbook, and there were 100 athletes and 448 non-athletes. The records were copied and thus the comparisons made on a percentage basis and presented in table form.

REVIEW OF RELATED STUDIES

In connection with this study the author made an intensive review of the literature relating to this particular study. There was material on both sections of this study, namely the subject elections and the scholastic records.

Among the studies in regard to the subject elections, Gould and Davis[2] attempted to point out some of the important reasons why high school pupils choose certain subjects, some of which were: as an aid to making a living; because of advice from parents, friends, and schoolmates; because some believed they had the ability to make a good mark in the subject; and because of the reputation of the standing of the subject.

Cook and Thompson[3] made a study of the comparison of letter and non-letter boys in a city high school. This study was made more intensively of the boys themselves, in connection with their absences and what attracted them to college, etc. Other studies were made by Templeton[4] in regard to the preferences of high school pupils and Franzen[5] who made a study concerning the enrollment in subjects in the North Central Association High Schools in Indiana, both of which brought out some very interesting results that might have a direct bearing on the results of this study.

A very recent study was made by Mitchell,[6] Director of Intramural Sports at the University of Michigan, on the interests of high school students. This study was based on the records of students who applied for admission to the University of Michigan directly from high school.

---

[1] "College Athletics and Scholarship," *Carnegie Foundation for the Advancement of Teaching*, Part II, Twenty-Second Annual Report, 1927, p. 53.

[2] Silas E. Gould and Robert A. Davis, "Some Reasons Why High School Pupils Choose Certain Subjects," *School Review*, 37:602, Vol. 14 (October, 1929).

[3] William Cook and Mable Thompson, "A Comparison of Letter Boys and Non-Letter Boys in a City High School," *School Review*, 36:350, Vol. 8 (1928).

[4] Payne Templeton, "A Study of Pupil Preferences," *School Review*, 38:532, Vol. 7 (September, 1930).

[5] Carl F. Franzen, "The Enrollment of Subjects in the North Central Association High Schools in Indiana," *Indiana University School of Education*, B, 6:64, Vol. 72 (May, 1930).

[6] Elmer D. Mitchell, "Interests of High School Students," *Journal of Health and Physical Education*, IV:3 (March, 1933), 60.

It must be recognized that each individual has many likes and dislikes, and by taking such into consideration Mitchell emphasizes the fact that in advising a high school student in regard to his vocation, the person in authority must study him as an individual. Mitchell further states that the curriculum should be sufficiently wide to give students the variety of courses and activities that they need if they are to choose wisely the vocation in which they will find the most success and enjoyment.

There is very little published material on the elections of high school students. None were found that pointed out the difference between subject elections of athletes and non-athletes, hence this study should be of some value to individuals who have the responsibility of advising students and also to coaches of athletic teams.

The related literature on scholastic records in connection with the group of athletes and non-athletes is more closely related to this particular study. However these studies are largely in connection with college groups rather than high school groups.

The Carnegie Foundation[7] made an extensive study in the comparison of athletes and non-athletes in American colleges and universities. Aside from the study of the colleges and universities, a comprehensive study was undertaken at Columbia University to make the comparison of the academic grades of 1925. Many valuable conclusions were reached in this study, one of which was that the groups appeared to be of about the same intelligence; however, the athletes fell slightly below the non-athletes on the basis of course grades which it was thought might have been due to the fact that the athletes tended to remain in school longer than the non-athletes.

Samuel[8] made a similar study for the Carnegie Foundation at the University of Michigan. Many results found by Samuel were the same as those found by the Carnegie Foundation at Columbia. This was a very interesting study and threw considerable light on this present study.

Curtis[9] made a study on the school letter and emphasized that athletes should not be the only ones to wear the school letter and that it might be best to award school letters to all-round students who stood out in scholarship, leadership, athletics, and general school activities. This might tend to increase the scholarship of both groups, the athletes and non-athletes.

There was a brief article on College Athletics and Scholarship[10]

---

[7] "College Athletics and Scholarship," *Carnegie Foundation for the Advancement of Teaching*, Part III, Professional Studies, Twenty-Second Annual Report, 1927, pp. 49-65.

[8] Harry L. Samuel, *Athletics and Scholarship*, Ann Arbor, Michigan: Edwards Brothers, 1928.

[9] Henry S. Curtis, "School Letter—Athletically, Scholarly and Otherwise," *Educational Review*, Vol. 73 (May, 1927), 292.

[10] "College Athletics and Scholarship," *Review of Reviews*, Vol. 73 (April, 1926), 423-4.

published in the *Review of Reviews* for April, 1926. It was pointed out in this article that the primary purpose of the colleges was to train minds, and should that purpose be accomplished successfully, there would be more power to athletics with their attributes of teamwork, sportsmanship, clean living, and good health. Furthermore, in the article it was stated that the "dumb athlete" exists no more; for under modern conditions, if his dumbness is effectively demonstrated, he ceases to be recognized as an athlete.

Another interesting study made by Hindmarsh[11] on "Scholarships and Athletics." It was pointed out that in order to hold a scholarship one must have an outstanding record, and it was found that men athletes comprised a fair proportion. It was also found that the athletes who did have scholarships regularly maintained a high rank throughout the whole of their college career. None received unsatisfactory standings as upperclass men, and more than half graduated with honors, which goes to show that athletes are at least of average ability.

All related literature reviewed before this study was undertaken threw considerable light on the purpose of this present study.

SUBJECT ELECTIONS

There is a large choice of subjects for all students at Union High School, Grand Rapids, Michigan, and a complete classification of all these subjects is shown in Table II. It is shown that all English subjects such as business English, journalism, English I, II, etc., are listed under the one heading of English. The author dealt with only the one main heading such as English, mathematics, languages, etc., in his manuscript. In this report, however, he has combined the entire group of subjects as will be shown in further tables. Regardless of this fact some of the important conclusions are based on the different subjects. Certain of the subjects are required of all students who enroll in school and perhaps may have a direct bearing on some of the conclusions. English is required for three years, mathematics for one year, etc.

This study was divided into 2 sections, namely, the comparison of subject elections and the scholastic records of the 448 non-athletes and 100 athletes. The first part was made on subject elections and a comparison was made between the 448 non-athletes and 100 athletes. The non-athletes were shown to have a slightly higher average in semester registrations over the period of 4 semesters, a figure of 16.37 subjects compared with 16.17 subjects for the athletes. The figures thus made the average subject load per semester for each non-athlete 4.09 subjects as compared to that of 4.05 subjects for each athlete. That shows only a slight difference of .05 of a subject which is almost an insignificant margin.

---

11 A. E. Hindmarsh, "Scholarships and Athletics," *North Central Association Quarterly*, Vol. 5 (Dec. 1930), 340-45.

TABLE I

GROUPING OF SUBJECTS TAUGHT AT UNION HIGH SCHOOL, GRAND RAPIDS, MICHIGAN, DURING THE YEARS 1930–31 AND 1931–32

Group Title	
English	English I, II, III, IV, V, VI, VII, VIII, Business English, and Journalism.
Social Sciences	History I, II (World) I, II, III, IV (European) American VII, VIII, American Government, Economics, Commercial Law.
Mathematics	Algebra I, II, III; Geometry I, II, III; Trigonometry, and Business Arithmetic I and II.
Physical and Biological Sciences	Chemistry I, II; Zoology I, II; Botany I, II; Physics I, II, Hygiene and Sanitation; General Science I, II; and Physiology.
Manual Arts	All the following have courses I and II and all but Aviation have Advanced courses: Auto Mechanics, Aviation, Cabinet Making, Printing, Machine Shop, Electric Shop, and Mechanical and Architectural Drawing.
Commercial Arts	Stenography I, II, III, IV; Typewriting I, II, III, IV; Bookkeeping I, II, III, IV.
Speech	Debating, Dramatics, Public Speaking I, II, III, IV, Speech Interpretation.
Art	Art I, II, III, IV, and Advanced.
Music	Band, Choruses, Orchestra, Harmony and Appreciation.
Bible Narrative	Courses I and II.
Retail Selling	Courses I and II.

TABLE II

TOTAL AND AVERAGE NUMBER OF SEMESTER REGISTRATIONS BY THE 448 NON-ATHLETES AND THE 100 ATHLETES, AND ATHLETES IN THE DIFFERENT SPORTS: FOOTBALL, BASKETBALL, TRACK, WRESTLING, TENNIS, AND GOLF AT UNION HIGH SCHOOL, GRAND RAPIDS, MICHIGAN, FOR YEARS 1930–31 AND 1931–32

Groups Four Semesters	Total Number of Semester Registrations	Average Number of Semester Registrations
448 Non-Athletes	7,404	16.37
100 Athletes	1,617	16.17
48 Football Athletes	727	15.10
30 Basketball Athletes	433	14.30
36 Track Athletes	542	15.03
12 Wrestling Athletes	183	15.23
11 Tennis Athletes	178	16.14
4 Golf Athletes	64	15.94

After having dealt with the subject elections of the two groups as a whole and comparing the results, the general group of athletes was divided into groups according to the sport in which they competed, namely, football, basketball, track, wrestling, tennis, and golf. In doing this it was found that there was an overlapping of individuals who competed in the different sports, such as football athletes who had also competed as basketball athletes. In the respective groups according to sports there were forty-eight football athletes, thirty basketball, thirty-six track, twelve wrestling, eleven tennis, and four golf.

The average subject elections of the athletes in the different sports can be seen in Table II, and also those of the non-athletes and the general

group of athletes. The results were derived from the elections in the different subjects shown in Table II. All averages were shown to be over 15 subjects for the 4 semesters with exception of the basketball athletes who dropped slightly below. Perhaps the dropping of the average subject elections of the athletes according to the individual sport is due to the overlapping of athletes in the different sports. However on the whole, the subject elections of the 100 athletes as a group and as athletes in the different sports are only slightly lower than those of the 448 non-athletes.

SCHOLASTIC RECORDS

The second part of the study, namely, the comparison of the scholastic records of the 448 non-athletes with those of the 100 athletes, brings out some very interesting results. The records of grades received in the different subjects bring out definite conclusions. Certain of the records, however, are compared after having combined those for all subjects into a total of grades for each group. The one variation of this is dealt with in Table V on failures and repeats.

In an attempt to make as accurate a comparison as possible in regard to the literal grades of all groups it was deemed necessary to have each literal grade represented by corresponding honor points which were used as a basis for determining the average grades. The literal grades and corresponding honor points were: *A*—3, *B*—2, *C*—1, *D*—0, and *E*—minus 1.

Tabulations of subjects showed that the two groups had like literal grades in English, social sciences, physical and biological sciences, commercial arts, and speech. Non-athletes averaged higher in mathematics, while the athletes had higher averages in languages, manual arts, art, and music. The average literal grade for both groups is shown in Table III along with the average literal grade of the athletes competing in the different sports. The average literal grade of the 448 non-athletes and the 100 athletes was a *C* but the average in honor points was slightly in favor of the athletes, 1.08 to 1.05 honor points. That is all shown in Table III along with the literal grades and average grades of the athletes competing in the different sports. All the athletes had practically the same average grade with the track, tennis, and golf athletes ranking slightly higher and the football athletes slightly lower than the non-athletes. On the whole they all had a slightly better average.

Table IV was worked out from the results of Table III to show the percentage of *A*'s, *B*'s, *C*'s, *D*'s, and *E*'s, and "lefts" and "drops" of the athletes and non-athletes, and of the athletes according to the different sports in connection with the semester registrations. A comparison of the grades of the groups as a total of all subjects can be seen at a glance in this table. On the whole the athletes did receive better grades in manual arts than did the non-athletes, which is not shown in the preceding table; and as for other differences, none were more noticeable than

TABLE III

LITERAL GRADES AS SHOWN BY NUMBER AND THE AVERAGE GRADE RECEIVED BY 448 NON-ATHLETES, 100 ATHLETES AND ATHLETES AS HAVING COMPETED IN THE DIFFERENT SPORTS: FOOTBALL, BASKETBALL, TRACK, WRESTLING, TENNIS, AND GOLF, AT UNION HIGH SCHOOL, GRAND RAPIDS, MICHIGAN, FOR YEARS 1930–31 AND 1931–32

Groups	Comparisons							
	A	*B*	*C*	*D*	*E*	Left and Drop	Honor Points	Literal Grade
448 Non-Athletes	549	1,802	2,900	1,661	414	78	1.05	*C*
100 Athletes	123	410	644	342	83	15	1.08	*C*
48 Football Athletes ..	41	154	288	192	45	7	.93	*C*
30 Basketball Athletes.	17	113	182	97	21	3	1.03	*C*
36 Track Athletes	53	154	230	89	14	2	1.26	*C*+
12 Wrestling Athletes..	17	43	71	34	14	4	1.08	*C*
11 Tennis Athletes	26	64	61	21	6		1.47	*C*+
4 Golf Athletes	5	22	28	8	1		1.35	*C*+

for the total average percentage for all subjects. However the tennis athletes did have a much higher percentage of *A*'s than did the non-athletes as shown by a figure of 14.6 per cent *A*'s as to 7.4 per cent *A*'s.

This table IV may be very conclusive as it places the athletes in a favorable position as contrasted to the non-athletic group. The results of this table may be attributed to the incentive to remain eligible for athletic competition, and this incentive may be regarded as an educational advantage. There is a possibility that an effort to present a like incentive for the non-athletic group is worthy of consideration.

TABLE IV

TOTAL LITERAL GRADES PERCENTAGES OF 448 NON-ATHLETES, 100 ATHLETES, AND ATHLETES AS HAVING COMPETED IN THE DIFFERENT SPORTS: FOOTBALL, BASKETBALL, TRACK, WRESTLING, TENNIS, AND GOLF AT UNION HIGH SCHOOL, GRAND RAPIDS, MICHIGAN, FOR YEARS 1930–31 AND 1931–32

	Literal Grade Percentage					
	A	*B*	*C*	*D*	*E*	Left and Drop
448 Non-Athletes	7.4	24.3	39.0	22.2	5.7	1.0
100 Athletes	7.6	25.3	39.9	21.2	5.2	.9
48 Football Athletes	5.6	21.1	39.6	26.5	6.2	.9
30 Basketball Athletes	3.9	26.1	41.8	22.4	4.8	.6
36 Track Athletes	9.7	28.4	42.4	16.4	2.5	.3
12 Wrestling Athletes	9.3	23.4	38.8	18.5	7.5	2.1
11 Tennis Athletes	14.6	35.9	34.2	11.8	3.3	0
4 Golf Athletes	7.8	38.3	43.7	12.5	1.5	0

One very interesting finding in the study of scholastic records should prove to be of value to the general educator in that it deals alone with the failures and repeats-of-failures of the athletes as contrasted to those of the non-athletic group. The one and most interesting finding that is

to be pointed out may be an argument in favor of athletics as an aid to education. Boys who have failed subjects and are not in athletics are less likely to repeat work that has been failed than the boys in athletics, as they wish to regain athletic eligibility. While the primary motive for repeating may be purely the eligibility one, the ultimate result is that the athlete in the end completes the work successfully, to his educational gain, while a greater number of the non-athletes never make the second attempt.

Table V shows the number and percentage of failures and repeats as well as the percentage differences in all subjects of the 100 athletes and 448 non-athletes. The table is based on the number of semester registrations in each subject. Many interesting results are derived from the following table and the differences can be quickly detected by a glance at the table. There were no comparisons made for commercial arts, speech, art, and music due to the fact that there were comparatively no failures and repeats in these subjects.

Many of the most interesting results will be shown in brief form along with the conclusions of the first section of the study.

CONCLUSIONS

There are many conclusions to be derived after the completion of this study and they may be briefly summarized in order that a clear understanding can be obtained by the reader. The comparison of the two groups, namely the athletes and the non-athletes, and the conclusions may help to clarify certain misconceptions in the minds of educators as well as of short-sighted citizens who would like to see athletics cut out of the schools.

On the whole in comparing the 100 athletes and the 448 non-athletes, practically the same subjects were elected according to percentage by both groups, the only noticeable difference being that the athletes elected .38 of a subject more manual arts over a period of 2 years than did the non-athletic group. That difference would be very slight owing to the fact that it was divided over a period of 4 semesters. The football athletes perhaps had a lot to do with this finding, as they elected .5 of a subject more manual arts than did the general group of athletes. The highest number of semester registrations were in English, social sciences, and mathematics, owing to their being required subjects, while manual arts was next in semester registrations for both groups but slightly higher for the athletes.

Taking all into consideration, the athletes, both as a group or as athletes competing in individual sports, all elected practically the same subject load for each semester over the period of the two years from which the study was made. This may be of interest to the outsider who often refuses to believe that such a conclusion actually exists.

Conclusions arrived at in regard to scholastic grades in the compar-

TABLE V

SEMESTER REGISTRATIONS, NUMBER AND PERCENTAGE OF FAILURES AND REPEATS, AND THE PERCENTAGE DIFFERENCES OF 448 NON-ATHLETES AND 100 ATHLETES IN ALL SUBJECTS AT UNION HIGH SCHOOL, GRAND RAPIDS, MICHIGAN FOR YEARS 1930–31 AND 1931–32

Subjects	448 Non-Athletes					100 Athletes					Percentage differences			
											Non-Athletes		Athletes	
	Semester Registrations	Failures	Percentage of Failures	Repeats	Percentage of Repeats	Semester Registrations	Failures	Percentage of Failures	Repeats	Percentage of Repeats	Failures	Repeats	Failures	Repeats
English....	1,548	131	8.4	61	46.5	335	27	8.06	21	77.7	.34			31.2
Social Sciences....	1,255	64	5.1	27	42.1	281	9	3.2	5	55.5	1.9			13.4
Mathematics	1,127	104	9.2	48	46.1	251	33	13.1	22	66.6			3.9	20.5
Languages..	690	76	11.0	31	40.7	140	10	7.1	1	10.0	3.9	30.7		
Physical and Biological Sciences....	780	35	4.5	8	22.8	183	1	.5	1	100.0	4.0			77.2
Manual Arts	859	3	.3	0	0	227	2	.8	1	50.0			.5	50.0
Total.....	6,259	413	6.7	175	42.1	1,417	82	5.7	51	62.2	1.0			20.1

isons of these 2 groups prove to be of like importance to educators and other interested individuals. For instance the average grade of all subjects for both groups was a grade of *C*, the only difference was .03 of an honor point in favor of the athletes. The highest average grades of all subjects for the athletes competing in individual sports are in the following order: golf, tennis, track, wrestling, basketball, and football. The football athletes received a low percentage of *A*'s and a high percentage of *C*'s, while the tennis athletes received a high percentage of *A*'s and *B*'s.

Some interesting results were shown in regard to the failures and the repeat of these failures. The non-athletes had a higher percentage of failures in English, social sciences, languages, and physical and biological sciences, while the athletes had a higher percentage of failures in mathematics. Of all these failures, the athletes had a much higher percentage of repeats with the exception of language, all of which may have been due to the desire to remain in school and keep eligible for athletic competition. It might be well, as a tip to educators, that some incentive might be used to encourage non-athletes to repeat more of their failed subjects, as the athletes from a total of all failures in all subjects repeated 20.1 per cent more failed subjects than did the non-athletes.

It is hoped that this study has pointed out that the group of male students in the high school who took part in athletics compare favorably with the remaining group of students in both subject elections and scholastic records.

BIBLIOGRAPHY

"College Athletics and Scholarship," *Review of Reviews*, Vol. 73 (April, 1926), 423-4.

Cook, William A., and Thompson, Mable. "A Comparison of Letter Boys and Non-Letter Boys in a City High School," *School Review*, 36:350, Vol. 8 (May, 1928), University of Chicago Press, Chicago, Illinois.

Carnegie Foundation for the Advancement of Teaching. "College Athletics and Scholarship," *Part III, Professional Studies, Twenty-Second Annual Report* (1927), 49-65.

Curtis, Henry S. "School Letter—Athletically, Scholarly, and Otherwise," *Educational Review*, Vol. 73 (May, 1927).

Franzen, Carl G. F. "Enrollment of Subjects in North Central Association High Schools in Indiana," *Indiana University School of Education Bulletin*, 6:64, Vol. 72 (May, 1930).

Hindmarsh, A. E. "Scholarships and Athletics," *North Central Association Quarterly*, Vol. 5 (December, 1930), 340–45.

Mitchell, Elmer D. "Interests of High School Students," *Journal of Health and Physical Education*, IV:3 (March, 1933), 60–67.

Morley, E. E. "Report of the North Central Association Committee on Athletics in the Secondary Schools," *North Central Association Quarterly*, Vol. 5 (December, 1930), 332–9.

Samuel, Harry L. *Athletics and Scholarship*, pp. 1–15. Ann Arbor, Michigan: Edwards Brothers, 1928.

Templeton, Payne. "A Study of Pupil Preferences," *School Review*, 38:532, Vol. 7 (September, 1930).

Curriculum Study for the Public Schools Section of the American Physical Education Association

Committee Members

A. O. Anderson
Board of Education,
Kansas City, Missouri

C. L. Glenn
Board of Education,
Los Angeles, California

Elizabeth McHose
Reading, Pennsylvania

Ethel Rockwell
Kalamazoo Public Schools,
Kalamazoo, Michigan

Fannie Shaw
University of Florida,
Gainesville, Florida

William Streit
Board of Education,
Cincinnati, Ohio

Laurentine B. Collins, *Chairman*
Department of Supervision,
Board of Education,
Detroit, Michigan

PRELIMINARY STATEMENT

THE CHAIRMAN has been assisted in a large measure in this contribution by Professor Herbert B. Bruner, Director of Curriculum Research, Teachers College, Columbia University and by Dr. Jesse F. Williams, Professor of Physical Education, Teachers College, Columbia University.

The problems in a study of this scope are manifold. We have an opportunity to do a challenging piece of work not only in the field of curriculum construction but in the field of progressive education.

First, this contribution to educational thought should be based upon a realistic and fearless interpretation of society. It should be apparent that the old order is dead. We are turning towards a new order, a new America, a new world in which we earnestly hope that all people, and particularly children, will have opportunities to live securely, decently, happily, and cooperatively. The new physical education must be entrusted to those who see clearly the issues involved and who will accept courageously and gallantly this great challenge.

Second, this curriculum study should represent the desirable and logical interrelationship of health and physical education.

Third, this study should serve to make this great area of educational experience more realistic by making its conclusions functional, not academic; by pointing trends, not being didactic about material; by serving

as guides to school administrators as well as to physical educators; by accommodating its material to fit in general all types of communities, schools, individuals. Its emphasis is upon curriculum *construction,* not upon curriculum *materials.*

PAST PROCEDURE

In the fall of 1932 Mr. Julius Kuhnert, Chairman of the Public Schools Section for that year, requested the initiation of this study.

I. REPORT PRESENTED AT THE NATIONAL CONVENTION AT LOUISVILLE, KENTUCKY, IN APRIL, 1933

This report was in the nature of a preliminary outline of the scope of such a study. At the same time an independent report on objectives was presented. As there was necessarily some overlapping in the two reports, some people suggested that a person outside the field of health and physical education be asked to head up both these committees. At the time this seemed inadvisable and in order to obviate some of the difficulties and to reanalyze the scope and content of the curriculum study the chairman worked with Dr. Bruner at the Laboratory of Curriculum Research, Columbia University. With the advice of Dr. Herbert B. Bruner and Dr. Jesse F. Williams the following reorganization was initiated.

II. REORGANIZATION OF COMMITTEES

1. General Committee (Advisory)

Specialist in Curriculum Research: Professor H. B. Bruner, Teachers College, Columbia University

Specialist in Elementary Education: Dr. Angela M. Broening, Assistant Director Department of Education, Baltimore, Maryland.

Specialist in Secondary Education: Professor W. C. Reavis, School of Education, University of Chicago

Superintendent of Schools: Frank Cody, Detroit Public Schools

Specialist in Elementary Health and Physical Education: Ethel Rockwell, Supervisor of Health Education, Kalamazoo Public Schools, Kalamazoo, Michigan

Specialist in Secondary Health and Physical Education: Ethel Perrin, Associate Director, Educational Service, American Child Health Association

Specialist in Rural Education: Dr. Mabel Carney, Teachers College, Columbia University

2. Committee on Evaluation of Present Programs

This committee to be made up in part of present personnel and to be added to, to ensure complete geographical distribution.

3. Committee on Correlations

Representatives from: Health Education, Recreation, Outside Health Agencies, Parent-Teachers Association, Social Studies, General Science, Fine and Industrial Arts, Music, Language Arts, and Home Economics.

4. COMMITTEE ON CONTENT

Problem of curriculum study is two-fold: (1) Survey of Present Practice; (2) Criteria for Future Growth.

III. SURVEY OF PRESENT PRACTICE

Academic evaluations of courses of study are inadequate. The committees considered carefully the use of two survey sheets: (1) "Rating Elementary School Course of Study" by Florence B. Stratemeyer and Herbert B. Bruner and (2) "Survey of Curricula in Physical Education" by Henry Harap. We decided that the tremendous amount of work entailed would not give us in the end a true picture of physical education programs throughout the country. The committee then decided to do a positive selection based upon best present practice.

1. *Letter sent to each state director* of health and physical education in the United States (Appendix *A*) asking him or her to select the best three programs in the state.

2. *Questionnaire* to large cities, small cities, rural communities (Appendix *B*).

This questionnaire was based in general upon the classification used by Eugene T. Lies in his evaluation of physical education programs in his monograph, *The New Leisure Challenges the Schools.*

ANALYSIS OF QUESTIONNAIRES

States represented:

Alabama
California
Connecticut
Delaware
Illinois
Indiana
Maine
Massachusetts
Michigan
Nebraska
New Jersey
New York
Ohio
Pennsylvania
Vermont
Wyoming

States still sending material:

Arizona
Florida
Minnesota
Mississippi
North Carolina
Oklahoma
Tennessee

States unrepresented:

Arkansas
Colorado
Georgia
Idaho
Iowa
Kansas
Kentucky
Louisiana
Maryland
Missouri
Montana
Nevada
New Hampshire
New Mexico
North Dakota
Oregon
Rhode Island
South Carolina
South Dakota
Texas
Utah
Virginia
Washington
West Virginia
Wisconsin

1. LARGE CITIES (Population range 76,000—1,500,000)

Pasadena, California	Springfield, Massachusetts
Lincoln, Nebraska	New Haven, Connecticut
Harrisburg, Pennsylvania	Hartford, Connecticut
Wilkes-Barre, Pennsylvania	Cincinnati, Ohio
Albany, New York	Detroit, Michigan

The material submitted in this analysis is general and serves only to point trends. As there is much more material coming in, a complete and statistical interpretation is not indicated at this time.

Educational Administration.—Predominately 6—3—3.

Physical Education Teachers.—Few elementary; all junior and senior high.

Regular Teachers.—Majority in elementary schools.

Program Content.—

Elementary (K–6): Rhythmic activity, games, stunts, relays, individual athletic games, story plays, self-testing activities. Single examples of calisthenics, limited apparatus, relief drills, corrective gymnastics.

Junior High School: Swimming, game skills, sports, relays, restricted activities, self-testing activities, rhythmic work including social, tap, clog, folk, stunts, intramural for girls, both intramural and interschool for boys. Single examples of tactics, mimetics, apparatus.

Senior High School: Sports, games, rhythmic activities, self-testing activities, athletics, apparatus, calisthenics, corrective gymnastics, restricted activities.

Time Allotment.—

Elementary—range — 30 minutes per week—250 minutes per week
—average—110 minutes per week
Junior High—range — 60 minutes per week—300 minutes per week
—average—195 minutes per week
High School—range —100 minutes per week—180 minutes per week
—average—140 minutes per week

Methods.—On the whole progressive; guidance, student leadership.

Conscious Objectives.—

"1. Promotion and conservation of health.

2. Guidance in right social relationships and desirable character traits, for good citizenship.

3. Inculcating knowledge and interest in games and sports that can be played after school and college days are past.

4. Development of leadership and good followership through pupil and player control of game activities under guidance of teachers.

5. Development of a love for wholesome physical activity."

Albany, New York

"Health; command of the fundamental process; namely, good posture, efficiency in simple movements, equilibrium or balance, effective motor coordination by

quickness of reactions and safety-first methods, a sense of rhythm, aesthetic appreciation, and somatic vigor.

General Aims:

1. *The preservation and improvement of health* through wholesome habits of living.
2. The improvement of organic functions, power, and *vitality to live the best.*
3. The highest development of neuromuscular skills for safety-first adjustments; vocational and avocational needs and pleasures of good living.
4. The acquisition of knowledges and appreciations of activities best suited for physical, mental, moral, and social development.
5. The development of good character and personality traits to contribute the best educational, recreational, social, and leadership training for good citizenship."

Pasadena, California

Personnel.—These programs are for the most part headed by a director, one or two supervisors, elementary, junior high school, and senior high school trained physical education teachers. Untrained elementary teachers are guided by trained supervisors. In some places doctors, dentists, and nurses are part of the staff.

Facilities.—Not completely adequate—junior and senior high schools are more adequate than elementary schools.

Special Comments.—

Superintendent actively supports program.

Athletic Board of Control helpful.

Athletics: Intramural for girls. Both for boys.

Tests: Various types of tests used to advantage.

Integrating Units: Better in elementary schools.

Outside Activities: Evening adult classes; summer playgrounds, Y.M.C.A., Y.W.C.A., etc.

Play Days: encouraged.

2. SMALL CITIES

Burlington, Vt.	24,789	Lynbrook, N. Y.	11,000
Belmont, Mass.	21,000	Palmerton, Pa.	7,800
Garrett, Ind.	4,428	Plainville, Conn.	7,000
Casper, Wyo.	20,000	Redwood City, Cal.	9,500
Lincoln, Ill.	13,000	York, Neb.	5,800
Ashland, Ohio	11,000	State of Alabama	
		Kent County, Cal.	

Educational Administration.—Equally divided between 6—3—3 and 8—4.

Special Physical Education Teachers.—Equally divided.

Regular Teachers.—Always directed by physical education supervisors.

Content.—

Elementary: Rhythmic activity, games, individual and group sports, stunts, tumbling, mimetics. Mentioned once: apparatus, marching.

Emphasis on physical examination, health instruction, and corrective procedures.

Junior High School: Fundamental skills, sports, rhythm, tap, clog,

social dancing, stunts, relays. Mentioned once: Danish, marching, formal, exercise, limited apparatus.

High School: Group and individual sports, rhythmic activity, grouping according to athletic ability, point systems, health instruction, swimming. Mentioned once: Danish, light apparatus, national achievement standards, program based upon individual needs.

Time Allotment.—

Elementary—range — 75 minutes per week—250 minutes per week
—average—118 minutes per week
Junior High—range — 90 minutes per week—180 minutes per week
—average—117 minutes per week
Senior High—range — 90 minutes per week—275 minutes per week
—average—125 minutes per week

Methods.—

Natural—teacher-pupil freedom
Direct and indirect
Leaders' corps and squad leaders
Pupil leaders and officials
Demonstration and trial by students

Conscious Objectives.—

"1. To develop physical growth and vitality.
2. To develop muscular skill and coordination.
3. To develop desirable social attitudes and habits.
4. To train for leisure-time activity.
5. To develop leadership, followership, self-control, responsibility, honest initiative, and cooperation."

Garrett, Indiana

Personnel.—Director and assistant director; regular teachers under guidance of specialist.

Facilities.—On the whole adequate.

Special Comments.—Athletic programs: intramural for girls; both for boys; single instances of interschool competition in elementary schools, "too much competition."

Test.—Used to assist in classification. Brace, P.F.I., and tests of organic power used.

Integration.—Home economics, science, music, art, dramatics, hygiene, biology.

Outside Activities.—Clubs, boy and girl reserves, athletic associations, community recreation. Play days — universally popular — dual meets, pageants, demonstrations.

3. Town and Rural Communities

Bourne, Mass	2,895	Cornwells Heights, Pa	5,000
Middlefield, Conn.	2,000	Unadilla Central School, N. Y.	1,100
Dennisville, N. J.	500	Colchester, Conn.	1,800
Neptune Township, N. J.		Avon, Conn.	1,738
West Liberty, Ohio	1,500	Dover, Del.	5,000
		State of Alabama	

Educational Administration.—Equally divided between all types.

Physical Education Teachers.—At least one specialist to direct and guide program.

Regular Teachers.—Under guidance of specialist.

Content.—

Elementary: Rhythmic activity, self-testing activity, games, stunts. Mentioned once: Marching, natural gymnastics, posture training, story plays.

Junior High School: Fundamental skills, games, sports, stunts, tumbling, rhythms. Mentioned once: National achievement standards, apparatus, marching.

Senior High School: Swimming, sports, games, stunts, intramural and interschool; dancing, self-testing activities. Mentioned once: Indian clubs, national achievement standards, apparatus, tactics, formal exercises.

Time Allotment.—

Elementary—range — 50 minutes per week—150 minutes per week
—average—100 minutes per week
Junior High—range — 60 minutes per week—150 minutes per week
—average—107 minutes per week
Senior High—range — 60 minutes per week—120 minutes per week
—average— 80 minutes per week

Method.—Direct and indirect—highly progressive—squad leaders, pupil activity, project method.

Conscious Objectives.—Vary like those in other divisions.

Personnel.—One full-time trained man or woman leading regular teachers and doing teaching on junior and senior high school level.

Facilities.—On the whole adequate. Equipment most inadequate.

Special Comments.—Success depends upon teacher. Individual activities receiving little attention.

Athletic Programs.—More interschool athletics.

Tests.—Hard to utilize tests for homogeneous grouping.

"We have had very little success with any of the motor ability tests. Probably in a small school there would be less necessity for their use than in a large school where classifying the students into homogeneous groups is a difficult task. In a small school where the instructor and each boy knows the ability of everyone else in the school, classifying the student is a comparatively easy task."

West Liberty, Ohio

Integration.—Music, art, dramatics, science, social studies, safety, home-making. Better in elementary divisions.

Outside Activities.—Teachers' meetings, demonstrations, girl scouts, camps, clubs, summer activities, men's clubs, churches, etc.

Play Days.—Unqualified approval and complete participation.

CONTRIBUTIONS FROM COMMITTEE ON CONTENT

1. Letter to members asking for discussion under Aim, Method, Content (Appendix *C*).
2. Elementary Division—Miss Ethel Rockwell.
3. Junior High School Girls—Miss Elizabeth McHose.
4. Junior High School Boys—Mr. William Streit; Mr. C. L. Glenn.
5. Senior High School Girls—Miss Fannie Shaw.
6. Senior High School Boys—Mr. A. O. Anderson.

The evaluation of this material is omitted from this report because all contributions were not presented in time.

IV. CRITERIA FOR FUTURE GROWTH

A. Evaluation of trends in curriculum construction:

1. Tendency toward a surprising unanimity regarding aims and objectives such as:

a) To enrich and extend the experience of the pupils.

b) To develop an understanding of present-day problems—social, political, industrial, economic.

c) To develop the powers of each child so that he may live profitably, cooperatively, and successfully in society.

2. Tendency to include a wealth of new materials and activities grouped into larger units built around central themes or big ideas.

3. Tendency toward the abandonment of the practice of listing large numbers of specific objectives at the beginning of a course of study. Specific objectives are being placed more frequently in close juxtaposition to the suggested experience and content.

4. Recognition of pupil needs and adaption to meet these needs by:

a) Providing for individual differences in ability and interests.

b) Stressing importance of immediate interests and activities.

c) Using homogeneous groupings as a partial basis for organization.

5. An increasing use of the procedure which combines content and method rather than that which delineates the content in one place and the method in another.

6. Adaptation to teacher needs by:

a) Not prescribing methods definitely.

b) Increasing respect for initiative and judgment of teacher.

c) Including a liberal amount of concrete material.

7. Increasing tendency to direct pupils to moving forces, causes, and problems rather than to formal bits of knowledge.

8. A better articulation of materials and experiences from the first grade to the twelfth.

9. Increasing desire and willingness to cross subject-matter lines in an effort to integrate and correlate basic curriculum problems.

10. Correlations are real and not artificial and the emphasis upon integration of a general curriculum aspect.

11. A tendency to include the following in most courses of study:
a) Illustrative lessons of teaching procedure.
b) Standards of attainment.
c) Suggested standards for checking results.
d) Type problems, projects, units based on children's contributions.
e) Basic references for children.
f) Basic references for teachers.

B. Fundamental or basic criteria in all curriculum construction:

1. Reconstruction of the function of health and physical education in a new social order.

2. A true conception of the aim and function of all education. Curricula are not as important as the method by which they were built and the growth evidenced in terms of pupils and teachers. Preoccupation with curriculum techniques and units will not promote this growth.

3. Democratic or socialized organization for curriculum construction. No autocratic hierarchy can create an effective course of study. It should be a cooperatively developed body of material contributed to by pupils, teachers, specialists, and administrators.

4. A plastic or fluid curriculum. This implies that the finished curriculum is in no way static. To be effective it must function in such a way that it points out trends and does not set crystalized goals.

5. Articulation and integration of content. In a public school curriculum there must be a basic interrelationship in the content of grades one through twelve. An integrated thread should run through the entire program.

C. Organization of curricular material:

1. Elementary Division:
Lower elementary grades 1—2—3
Upper elementary grades 4—5—6
a) Basic Principles:
(1) The elementary school child; physically, socially, emotionally.
(2) Functions of the elementary school.
(3) Organization of the elementary school.
(4) Place of teacher (special or classroom).
(5) Physical education time allotment, facilities, equipment.

2. Junior High or Intermediate School Division:
Grades 7—8—9
a) Basic Principles:
(1) The junior high school child: physically, socially, emotionally.
(2) Functions of the junior high school.
(3) Organization of the junior high school.
(4) Place of the teacher (special or classroom).
(5) Physical education time allotment, facilities, equipment.

3. High School Division:

Grades 10—11—12

a) Basic Principles:

(1) The high school child: physically, socially, emotionally.

(2) Functions of the high school.

(3) Organization of the high school.

(4) Place of the teacher.

(5) Physical education time allotment, facilities, equipment.

D. Principles Underlying Organization of Physical Education Content:

1. Core of entire educative process is the child

Physical aspect Social aspect Emotional aspect Mental aspect	In terms of education and physical education

2. Boys' and girls' program constructed together.

3. Progression of control is through activities and not by grades.

4. Material organized around the laboratory. The unit of the course is to some extent dependent upon the laboratory situation in terms of facilities, equipment, and time allotment. Arbitrary activity classifications are often misleading and artificial.

E. Committee Procedures in Construction of Physical Education Curriculum:

1. Committee Organization:

a) Articulation Committee (Advisory): administrative officer, curriculum expert, principals, supervisor, teacher.

b) Central Committee: Broad committee to promote understanding and interpretation of program—special teachers, department heads, supervisor.

c) Correlation Committee: That committee responsible for organization and evaluation of curricular materials—teachers, supervisor, or curriculum expert.

d) Subcommittees: Committees working on various units.

F. Types of Units Selected from Curriculum:

Various forms have obtained in types of units:

1. Units of unplanned experience.

2. Units which start with an adjudged, worth-while, purposeful experience and are allowed to eventuate in whatever subject matter they will.

3. Theme or generalization unit.

4. Teacher determines in advance the information and consciously plans activities which will eventuate in desired ends.

5. Subject-matter units involving correlation.

6. Drill or topic units.

(The above classification is taken from *Place of Units in Course of Study Construction*, H. B. Bruner.)

One type which included some of the above factors follows:

1. Statement of General Objectives.
2. Statement of Specific Objectives.
3. Activities: Learning situations or pupil experiences based upon and organized around a central theme or idea.
4. Teaching Procedures: suggested approaches, suggested techniques.
5. Outcomes.
6. References.
7. Tests that may measure in part the growth of the learner.

G. Bibliography:

See Appendix *D*.

FURTHER PROCEDURE

What is to be done further in developing, integrating, and refining this curriculum study should be worked out by the committee members and from the suggestions of all members of the Public Schools Section.

The following aspects of the problem should be dealt with in more detail:

I. Integrating the Work of Committee on Objectives and Committee on Curriculum Study.

II. Reanalysis of Questionnaire.

A. Many returns on the questionnaire came in too late for inclusion in this report. This part should be retabulated.

B. Questionnaire to be sent in the fall of 1934 to lay educators in six states which have already answered in terms of physical education:

Massachusetts	Alabama	New York
Ohio	California	Michigan

III. Organization and Evaluation of Material on Content.

A. This subcommittee is preparing succinct statements on aim, method, and content for elementary, junior high, and senior high levels.

IV. Section on Types of Program to be Completed.

A. Programs to be built from progressive to less progressive.

B. Programs to be built from "long view" to immediate needs

10 year—5 year

2 year—immediate

V. "The New Leisure Challenges the Schools" by Eugene T. Lies.

Mr. Lies may have unpublished material which he gathered for the Section on physical education for this report on leisure. There may be a chance that he would cooperate with the Curriculum Study by lending his unpublished material.

VI. Completed Curriculum Study to be Published in Monograph Form.

APPENDIX A

February 12, 1934

State Director of Health and Physical Education,
Dear Sir:

This is a very strong plea for some help on what we consider an important project of the Public Schools Section of the American Physical Education Association.

We are very eager to make a fair survey of the best programs in physical education in the country instead of evaluating courses of study which at best is an academic and unscientific procedure. We want to know of actual working situations where fine programs are in existence.

To ensure that your state will be fairly represented in this survey will you be kind enough to answer the enclosed questionnaire?

I know how many questionnaires come to your desk to be answered, but I think that this curriculum study will eventually be of great help to the health education field. Therefore, we beseech your cooperation and urge you to return this material by March 8th.

Very truly yours,

LAURENTINE B. COLLINS,
First Assistant, Health Education
Chairman, Curriculum Study, Public Schools Section, American Physical Education Association

APPENDIX B

CURRICULUM STUDY—PUBLIC SCHOOLS SECTION AMERICAN PHYSICAL EDUCATION ASSOCIATION SURVEY OF PRESENT PRACTICE

Dear Sir:

Will you select the three best physical education programs in your state; one for a large city, one for a small community, and one for a rural situation. Will you describe each fully enough so that a fairly complete picture is presented. Will you use a separate questionnaire for each program.

Name of City..... Name of Director.....
Population.....
Educational Administration—Grades 6—3—3
Grades 8—4
Platoon
Traditional
Special Physical Education Teachers—Elementary
Junior High
Senior High
Program directed by regular teachers—Elementary
Junior High
Senior High

Categories for Evaluation

1. Program Content:
   Elementary Grades (K-6)
   Junior High Grades (7-8-9)
   Senior High Grades (10-11-12)
2. Time Allotment
3. Methods
4. Conscious Objectives
5. Personnel
6. Facilities

APPENDIX C

February 10, 1934

My Dear

I am sure that in this particularly busy year for all of us, you understand why I have not made contacts with committee members on the Curriculum Study of the Public Schools Section. I have presumed to think that you would prefer to do a concentrated piece of work in a few weeks rather than to string our work along over a longer period of time. However, this means that if the curriculum study is to show progress at the National Convention we must concentrate and must get in material *absolutely* on time. May I count on your cooperation?

1. A survey of present programs in the field is to be made by requesting state directors to describe the three best programs in their state for a large city, small community, and a rural situation. These are to be analyzed and results presented at Cleveland.

2. An evaluation of content for three divisions using the present personnel as follows:

Elementary Schools—Miss Ethel Rockwell
Junior High School Boys—Mr. William Streit, Mr. C. L. Glenn
Senior High School Boys—Mr. A. O. Anderson
Junior High School Girls—Miss Elizabeth McHose
Senior High School Girls—Miss Fannie Shaw

Will you please state carefully your ideas on the content that should be included in a desirable program of health and physical education in the division assigned to you. Please feel free to select any type of outline for your material. Will you also consider how much definite content should be included in the finished report. Will you also include a statement on aims for the division assigned to you and a brief statement on method.

I shall attempt to summarize and integrate this material for the national meeting.

Will you be kind enough to have this material in my hands *no later than March 8th.*

Let's concentrate on this job in the next weeks and present a good report at the Public Schools Section meeting. Will you also write me whether or not you plan to be in Cleveland so that we may arrange a committee meeting?

Very sincerely yours,

LAURENTINE B. COLLINS
First Assistant, Health Education
Chairman, Curriculum Study Public Schools Section, American Physical Education Association

APPENDIX D

BIBLIOGRAPHY

GENERAL BOOKS:

Alleghany County, Maryland. *Curriculum Revision Program.*

American Educational Research Association. *Curriculum.* Washington, D.C.: N.E.A., 1931.

Bonser, F. E. *Life Needs and Education.* New York: Teachers College, Columbia University, 1932.

Brewer, F. G. *Life Needs and Education.* New York: Teachers College, Columbia University, 1932.

Briggs, T. H. *Curriculum Problems.* New York: Macmillan Co.

Caswell, H. L. *Program Making in Small Elementary Schools.* Nashville: George Peabody College, 1932.
Charters, W. W. "Curriculum Construction," *Department of Superintendence, Third and Fourth Yearbooks.*
Harap, Henry. *Economic Life and the Curriculum.* New York: Macmillan Co.
Harap, Henry. *Technique of Curriculum Making.* New York: Macmillan Co., 1928.
Hopkins, L. T. *Curriculum Principles and Practice.* Sanborn, 1929.
Horn, J. L. *Principles of Elementary Education.* New York: Century Co., 1929.
Houston, Texas. *Curriculum Revision and Development.* Board of Education, 1930.
Kilpatrick, W. H. *Educational Frontiers.* New York: Century Co., 1933.
Kinneman, J. A. *Society and Education.* New York: Macmillan Co., 1932.
McMurray, C. A. *How to Organize the Curriculum.*
Melvin, Gordon. *Technique of Progressive Teaching.* New York: John Day, 1932.
Montgomery County, Maryland. *Professional Yearbook.* 1930–31.
N.E.A. Department of Superintendence. "Articulation of the Units of American Education," *Seventh Yearbook,* 1929.
N.E.A. Department of Superintendence. *Eighth Yearbook.*
N.E.A. Department of Rural Education. *Organization of Curriculum for One-Teacher Schools.* 1933.
N.S.S.E. "Curriculum Making, Past and Present," Part I, *Twenty-Sixth Yearbook,* 1926.
Northwestern University, School of Education. *Curriculum Making in Current Practice.* Evanston, Illinois, 1932.
Osburn and Rohan. *Enriching the Curriculum for Gifted Children.* New York: Macmillan Co., 1931.
Rugg, H. O. "A Century of Curriculum Making in American Schools," *Twenty-Sixth Yearbook of N.S.S.E.,* Part I, 1926.
Snedden, D. S. *Foundations of Curricula.* New York: Teachers College, 1927.
South Dakota State Department of Public Instruction. *The Place of Units in Course of Study Construction.* 1930.
South Dakota State Department of Public Instruction. *Tentative Reports of Executive Committee on Theories Regarding and Approaches to Curriculum Construction.* 1930.
Stratemeyer, F. *Effective Use of Curriculum Materials.* New York: Teachers College, 1931.
Stratemeyer, F., and Bruner, H. B. *Rating Elementary School Courses of Study.* New York: Teachers College, 1926.
U.S. Office of Education. *Current Practices in the Construction of State Courses of Study,* Bulletin No. 4, 1931.
Weber, O. F. *Problems in Public School Administration.*

HEALTH AND PHYSICAL EDUCATION:

Davis, E. C. *Methods and Techniques Used in Surveying Health and Physical Education in City Schools.* New York: Teachers College, 1932.
Lerrigo, M. O. *Health Problem Sources.* New York: Teachers College, 1926.
Nash, Jay B. *Administration of Physical Education.* New York: A. S. Barnes and Co., 1931.
Rogers, F. R. *Educational Objectives of Physical Activity.* New York: A. S. Barnes and Co., 1929.
Rogers, F. R. *Fundamental Administrative Measures in Physical Education.* Newton, Massachusetts: Pleiades Company, 1932.
Wayman, Agnes. *Education Through Physical Education.* Philadelphia: Lea and Febiger, 1925.
Williams, J. F., and Brownell, C. L. *Health and Physical Education for Public School Administrators.* New York: Teachers College, 1931.

Williams, J. F. *Principles of Physical Education.* Philadelphia: W. B. Saunders Co., 1927.

Wood, T. D., and Cassidy, R. F. *The New Physical Education.* New York: Macmillan Co., 1927.

ARTICLES:

Barnes, H. B. "Curriculum Planning for a Changing Society," *Childhood Education,* 9:171–6 (January, 1933).

Boardman, C. W. "Curriculum Revision in the Light of the Survey," *North Central Association Quarterly,* 7:233–6 (September, 1932).

Bobbitt, F. "Discovering the Objectives of Health Education," *Elementary School Journal* (June, 1925), 755–62.

Bobbitt, F. "Social Value of the Junior High School Curriculum," *School Executives Magazine,* 52:179–81 (January, 1933).

Borgeson, F. C. "School Curriculum and Contemporary Life," *Journal Education Society,* 3:181–5 (November, 1929).

Bower, W. C., and Emme, E. E. "Trends in Curriculum Theory," *Religious Education,* 26:259–7 (March, 1931).

David, F. L. "Selection and Organization of Personnel for Curriculum Revision," *Curriculum Laboratories, Western Reserve University,* 1932.

Detraz, M. J. "Critical Analysis of the Activity Curriculum in the Elementary School," *Childhood Education,* 9:198–200 (January, 1933).

Freeman, F. N. "Should the Curriculum be Built on Children's Interest or Social Needs," *School Executives Magazine,* 50:533 (August, 1931).

Hatfield, W. W. "Ideal Curriculum," *Elementary English Review,* 9:179–8 (September, 1932).

Howard, G. "Curriculum Changes in High Schools," *High School Journal,* 15:214–19 (May, 1932).

Kilpatrick, W. H. "Philosophy of the Curriculum," *New Era,* 10:85–90 (April, 1929).

Kinneman, J. A. "Urban Centers and the Curriculum," *Journal Education Society,* 6:150–7 (November, 1932).

Lane, R. H. "Principles Which Will Integrate Elementary, Secondary, and Higher Education," *Los Angeles Educational Research Bulletin,* 11:122–4 (May, 1932).

LaPorte, W. H., and Others. "Report of Committee on Curriculum Research," A.P.E.A., RESEARCH QUARTERLY, 1:15–40 (May, 1930); 3:130–141 (May, 1932).

McGauphy, J. R. "Homogeneous Grouping," *Childhood Education,* 6:291–296 (1930).

Mays, A. B. "Practical Arts and Integration of the Curriculum," *School Review,* 41:51–5.

Mearns, H. "Curriculum and the Creative Spirit," *New Era,* 10:113–18 (April, 1929).

Melvin, A. G. "Current Confusion Concerning the Curriculum," *School and Society,* 33:729–3 (May 30, 1931).

Merrizm, J. L. "Life Activity Curriculum," *Teachers College Record,* 33:15–25 (October, 1931).

Muldoon, M. W. "Individual and the Curriculum," *New York State Education Bulletin,* 17:233–4 (November, 1929).

Myers, A. F. "Advisory Service Related to Curriculum Revision," *Journal Education Society,* 5:580–5 (May, 1932).

Newlon, J. H. "Integration in the High School," *School Executives Magazine,* 52:197–8 (February, 1933).

Rugg, H. O., Bowen, E. G., Snedden, D., and Bode, B. "Most Outstanding Next Steps for Curriculum Makers in the United States," *Teachers College Record*, 30:179–211 (December, 1928).

Snedden, D. S. "Education for a Changing Social World," *N.E.A. Proceedings*, 1932:641–8.

Taylor, A. S. "Curricular Research Is Urgently Needed," *Junior College Journal*, 2:246–8 (February, 1933).

Threlkeld, A. L. "Changing Conceptions of Curriculum Making," *Kentucky University Proceedings of Fifth Annual Education Conference.*

Tubbs, E. V. "Modernizing Courses of Study and Teaching Procedures," *American Federationist*, 39:1139–45 (October, 1932).

Watson, G. "Integrated Curriculum for the Integration of Children," *N.E.A. Proceedings*, 1931:472–6.

BIBLIOGRAPHIES:

U. S. Office of Education, Library Division. *Bibliography on Curriculum Making*, Bibliography of Research Studies in Education 1926–27, 1927–28, 1928–29, 1929–30.

Lincoln School, Teachers College, Columbia University. *Bibliography*, (Catalogues, units of work, activities, projects, etc. to 1932) Teachers College 1932.

Bibliography for 1933

Compiled by G. B. Affleck, A.M., M.P.E.
Professor of Physical Education,
Springfield College,
Springfield, Mass.

ANTHROPOMETRY*

Indices, Measurements, Tests

Aldrich, C. A. "Growth and Development." *Jr. Pediatrics* II: (Jan., 1933), 80.

Bitgood, P. B. Seasonal Increments in Growth in Height According to Age in Elementary School Boys. Springfield College Grad. Thesis 1933, 37 pp.

Chamberlain, C. G. "Determining Individual Needs in Physical Education." *Jr. H. & P. E.* IV:8 (October, 1933), 18–21, 62–3.

Clarke, H. H. "An Objective Method of Measuring the Height of the Longitudinal Arch in Foot Examinations." Res. Quar. IV:8 (October, 1933), 99–107.

Coppoletta, J. M. and Wolbach, S. B. "Body Length and Organ Weights of Infants and Children." *Am. Jr. Pathology* IX: (Jan., 1933), 55.

Dunder, V. C. "A Multiple Strength Index of General Motor Ability." Res. Quar. IV:8 (October, 1933), 132–42.

Fleming, R. M. *A Study of Growth and Development: Observations in Successive Years on the Same Children.* London, His Majesty's Stationery Office, 1933, 85 pp. pa. 1s.6d.

Kleitman, N. "Diurnal Variation in Efficiency." *Science* LXXVI. (December 16, 1932), 570.

Lucas, W. P. *et al.* "Growth Problems and Their Relation to Zones of Normal Physiologic Reactions." *Jr. Pediatrics* I: (Nov., 1932), 572.

MacCurdy, H. L. *A Test for Measuring the Physical Capacity of Secondary School Boys.* Yonkers, N. Y. Author, 1933, 59 pp.

Mumford, M. M. "Physical Measurements of Adolescent Schoolboys in Relation to Scholastic Attainment and Prowess in Games and Sports." *Jr. Hyg.* (London) XXXIII: (January, 1933), 80.

Nixon, E. W. "Achievement Tests in Activities for Men Physical Education Teachers in Training." *Jr. H. & P. E.* IV: (May, 1933), 30, 49.

Oestreich, H. G. "Use of Physical Capacity Tests in a Small City System." *Jr. H. & P. E.* IX: (October, 1933), 36–7, 50.

Palmer, C. E. "Seasonal Variations of Average Growth in Weight of Elementary School Children." *Pub. Health Reports* XLVIII: (March 3, 1933), 211–33.

Rowe, F. A. "Growth Comparison of Athletes and Non-Athletes." Res. Quar. IV: (October, 1933), 108–16.

"Seasonal Variations in Growth" (Editorial). *Jr. A. M. A.* C: (April 22, 1933), 1254–5.

Turner, C. E. "Seasonal Fluctuations in Growth with Special Reference to the Clothing Factor." Res. Quar. IV: (March, 1933), 177–97.

AQUATICS

Deaver, G. G. and Coulter, J. S. "Physical Medicine Applied to Swimming." *Ath. Jr.* XIII: (January, 1933), 30–4.

Karpovich, P. V. "Water in the Lungs of Drowned Animals." *Archives of Pathology* XV. (June, 1933), 828–33.

Komp, J. "Water Tricks" (Stunts). *Beach & Pool* VII: (March, 1933), 75, 78.

McCormick, O. "The Magic Urn—A Water Pageant." *Beach & Pool* VII: (March, 1933), 72–3, 88.

McCormick, O. *Water Pageants.* New York, A. S. Barnes & Co. 1933, 138 pp.

Witte, C. "Natanis' Gift to His People"

*Additional items added after the bibliography was prepared are listed in the addenda on page 150.

(Water Pageant). *Beach & Pool* XII: (April, 1933), 107–8, 121.

Boats, Canoes, Yachts

Hauk, W. "Yacht Racing in America: What It's All About." *Sportsman* XIII: (May, 1933), 34–8.

Hubbard, C. J. "Rowing Is a Queer Sport." *Sportsman* XIII: (June, 1933), 24–5.

Pulling, A. *The Elements of Canoeing.* Ann Arbor, Ann Arbor Press, 1933, 139 pp. $2.00.

Diving and Swimming

Bilik, S. E. "Is Swimming Harmful?" *Ath. Jr.* XIV: (September, 1933), 34–8.

Bishop, M. W. "New York Swims"—(Board of Education Supports). *Beach & Pool* VII: (April, 1933), 103–6, 112–4, 118–9, 122.

Douglas, E. W. "Swimming and Diving Training Program." *Jr. Phys. Educ.* XXX: (March, 1933), 131–2.

Howcroft, W. J. "Olympic Swimming: Why Japan Has Advanced." (Copied) *Mind & Body* XL: (May-June, 1933), 69–71.

Karpovich, P. V. "Water Resistance in Swimming." Res. Quar. IV: (October, 1933), 21–8.

Longfellow, W. E. "Why Not Swim?" *Beach & Pool* VII: (March, 1933), 85, 87, 90.

"Popularizing the Swimming Badge Tests." *Recreation* XXVII: (July, 1933), 183, 205.

Robinson, T. "Swimming, Diving and Water Polo." *Ath. Jr.* XIV: (October, 1933), 36–8.

———. "How Swimmers Use Their Legs." *Ath. Jr.* XIII: (January, 1933), 8–9.

Sjolin, K. E. "The Teaching of High Diving." *Mind & Body* XL: (May-June, 1933), 71–6.

Wieting, F. J. "Progress in the Water." *Jr. Phys. Educ.* XXX: (May, 1933), 158–9.

Wilson, C. T. Coordination Tests in Swimming. Springfield College Grad. Thesis 1933, 97 pp.

NATATORIA

Construction, Operation

Gardner, E. H. "Small Town Pools" (Reprinted). *Beach & Pool* VII: (April, 1933), 109–10, 123.

Hadden, G. "Pools for Colleges." *Beach & Pool* VII: (March, 1933), 69–70, 89.

Horn, D. W. "Is Germ Chlorination Fatal?" *Beach & Pool* VII: (March, 1933), 76–7, 80.

Horwood, M. P. *et al.* "Indices of the Sanitary Quality of Swimming Pool Water." *Amer. Water Works Ass'n.* XXV: (January, 1933), 124 +.

"Laundering Suits and Towels." *Beach & Pool* VII: (March, 1933), 74, 91.

Notable Swimming Pools and Guide to Equipment and Supplies. New York, Hoffman-Harris, Inc., 1933.

ATHLETICS—SPORTS

"Athletics a Part of Education." *Ath. Jr.* XIV: (Dec., 1933), 38–41.

"Books on Sport." *Sportsman* XIV:3: (Sept., 1933), 59–79.

Brammel, P. R. *Intramural and Interscholastic Athletics.* Washington, Gov't Printing office, 1933.

Bulkler, J. B. "The Management of Athletics as Applied to the Student." *Ath. Jr.* XIII: (January, 1933), 34–6.

Cooper, J. A. The Effect of Participation in Athletics upon Scholarship Measured by Achievement Tests. Thesis, Penn State College, 1933, 21 pp.

Cureton, T. K., Jr. and Coe, D. E. "Analysis of Errors in Stop-watch Timing." Res. Quar. IV:2: (May, 1933), 94–109.

Fisher, G. R. "School Athletics Become Increasingly Valuable." *Ath. Jr.* XIII: (April, 1933), 16–7.

Harmon, J. M. "The Future of Coaching in Secondary Schools." *Education* LIII: (April, 1933), 471–4.

"Helps and Hints on Coaching Interscholastic Athletics." *Ath. Jr.* XIII: (Feb., 1933), 14–6, 38–47.

"Helps and Hints on Coaching Football and Basketball." *Ath. Jr.* XIII: (January, 1933), 16–21, 44–6.

Hyde, E. I. "Measurements of Achievement in Archery." *Jr. Educ. Research* XXVII: (May, 1933), 673–86.

Karpovich, P. V. "Sugar in Athletics." *Scholastic Coach* (Sept., 1933), 9, 32–33.

McGovern, J. T. "Spectator Sportsmanship." *Recreation* XXVI: (January, 1933), 465–7, 497.

Oktavec, F. L. "Spectator Sports." *Recreation* XXVII: (October, 1933), 320–2, 347.

"Organized Hunts of America." *Sportsman* XIV:4: (October, 1933), 42–9.

Parker, A. E. "Training for Athletics and Health." *Hygeia* XI: (Jan., 1933), 17–20; (Feb., 1933), 144–7; (March, 1933), 242–6; (April, 1933), 343–6, 370–2; (May, 1933), 433–6; (June, 1933), 536–9; (July, 1933), 610–3; (Aug., 1933), 711–4; (Sept., 1933), 823–7; (Oct., 1933), 914–6; (Nov., 1933), 983–6, 1040–3; (Dec., 1933), 1078–80.

Paulison, W. M. "Athletic Events at a Century of Progress." *Ath. Jr.* XIII: (June, 1933), 5–6.

Penick, D. A. "Ideals of Intercollegiate Athletics — Are They Attainable?" RES. QUAR. IV: (March, 1933), 26–34.

"Preparing the Team for the Tournament Season." *Ath. Jr.* XIII: (January, 1933), 13–5, 47; (February, 1933), 11–3, 47.

Richardson, W. A. *Manual of Athletic Requirements: United States Naval Academy, Annapolis—U. S. Naval Inst.* 1933, 437 pp. $5.

Savage, H. J. "Carnegie Foundation's Study of American College Athletics —Three Years Later." RES. QUAR. IV: (March, 1933), 15–25.

Stalnaker, J. M. "Athletics." *Jr. Higher Educ.* IV: (April, 1933), 187–90.

Woodward, D. "Athletic Training." *Ath. Jr.* XIV: (November, 1933), 37–44.

Baseball

Lowman, G. S. "Batting and Bunting." *Ath. Jr.* XIII: (April, 1933), 6–9.

Lymperopoulos, J. "Handling the Ball in the Infield: Play of Each Position." *Ath. Jr.* XIII: (June, 1933), 9–12, 26–8.

McCormick, T. G. "Technique and Fundamentals of Pitching." *Ath. Jr.* XIII: (April, 1933), 5–6.

Merrell, H. D. "Finding the Unknown Quantity in Baseball." *Ath. Jr.* XIII: (April, 1933), 19.

Basketball

Allen, F. C. "Standardized Nomenclature in Basketball." *Ath. Jr.* XIV: (November, 1933), 36.

"College Basketball Coaches Association, Research Department." *Ath. Jr.* XIII: (January, 1933), 6–8.

Dienhart, J. "National Tournament Play" (Basketball). *Ath. Jr.* XIII: (April, 1933), 14–5.

Gullion, B. 'Free Throw Technique in Basketball." *Ath. Jr.* XIII: (March, 1933), 38–40.

"Handling the Team During the Tournament Season." *Ath. Jr.* XIII: (March, 1933), 15–6, 32.

Long, H. K. "Basketball Problems for the High School Coach." *Ath. Jr.* XIV: (December, 1933), 25–6.

Money, C. V. "Tests for Evaluating the Abilities of Basketball Players." *Ath. Jr.* XIV: (November, 1933), 32–4; (December, 1933), 18–9.

"Proceedings of Seventh Annual Meeting of the National Association of Basketball Coaches." *Ath. Jr.* XIII: (June, 1933), 13–7, 28–44.

Prudhom, H. C. "Individual Zone Defense." *Ath. Jr.* XIII: (January, 1933), 8–11.

Ruby, J. C. "Crowding Around the Center Jump." *Ath. Jr.* XIV: (October, 1933), 17–8.

Ruby, J. C. "Legal and Illegal Maneuvers in Basketball." *Ath. Jr.* XIV: (December, 1933), 10–7.

Stahl, F. S. "Offensive and Defensive Drills on Basketball Fundamentals." *Ath. Jr.* XIV: (December, 1933), 27–9.

"State Championship Basketball." *Ath. Jr.* XIII: (May, 1933), 8–39.

Football

Barbour, R. H. *Football Plays for Boys.* Brooklyn, Appleton-Century Co. 1933. pp. 110. $1.25.

Barker, R. W. "Offensive Line Plays." *Ath. Jr.* XIV: (October, 1933), 9.

Callard, L. "Coaching Backfield Fundamentals." *Ath. Jr.* XIV: (September, 1933), 10–4.

Clarke, H. H. "Desirability of Standardizing Touch Football Rules." RES. QUAR. IV: (March, 1933), 91–8.

"Collegiate Football Attack — 1933."

Ath. Jr. XIV: (November, 1933), 10–25.
Crisler, H. O. "Educational Implications of Intercollegiate Football." Res. Quar. IV: (March, 1933), 35–43.
"Football Rules and Ideals." *Ath. Jr.* XIII: (April, 1933), 11–3, 47.
Godfrey, E. R. "Defensive Line Play." *Ath. Jr.* XIV: (October, 1933), 7–8.
"High School Football Offenses—1933." *Ath. Jr.* XIV: (November, 1933), 26–30.
"Is Modern Football Soft?" *Sportsman* XIV:4: (October, 1933), 22–3.
"Legal and Illegal Blocking and Forward Pass Interference." *Ath. Jr.* XIV: (October, 1933), 10–6.
Long, H. K. "High School Football Problems." *Ath. Jr.* XIV: (October, 1933), 22–4.
Okeson, W. R. "Principal Changes in the Football Rules for 1933." *Ath. Jr.* XIV: (September, 1933), 9, 46–7.
Rowe, F. A. "How the Football Rules Committee Functions." *Ath. Jr.* XIII: (April, 1933), 32–6.
Ruble, O. G. "Spring Football Tournament." *Ath. Jr.* XIII: (April, 1933), 42–4.
Stephenson, B. T. "Football from 1874 to 1933." *Sportsman* XIV: (November, 1933), 21–2, 48–9.
Storey, E. J. "Touch Football: The Fall Sport for Boys." *Jr. H. & P. E.* IV: (October, 1933), 41, 61.
"Technical Talks on Football." *Ath. Jr.* XIII: (March, 1933), 19–30.
"Various Phases of Football." *Ath. Jr.* XIV: (September, 1933), 20–4.

Golf

Murphy, M. A. "Criteria for Judging a Golf Knowledge Test." Res. Quar. IV: (December, 1933), 81–8.
Payseur, T. "Helpful Hints on How to Improve Your Golf Game." *Ath. Jr.* XIV: (Sept., 1933), 174; (Oct., 1933), 26–7; (Nov., 1933), 9–10; (Dec., 1933), 19, 45.
Trevor, G. "Fifteen Champion Golf Courses." *Sportsman* XIV: (September, 1933), 21, 42–3.

Soccer

Caswell, J. E. *Soccer for Junior and Senior High Schools.* New York, A. S. Barnes & Co. 1933, pp. 96. $2.00.
———. "Soccer Meets the Newer Needs." *Jr. H. & P. E.* IV: (October 1933), 44, 63.
Elerin, K. P. "Fundamentals of Soccer." *Scholastic Coach* (September, 1933), 12, 24–6, 33.

Lawn Tennis, Squash, Badminton

Aberdare, (Lord). *Rackets, Squash-Rackets, Fives & Badminton.* Philadelphia, J. B. Lippincott Co. 1933, 328 pp. $5.00.
Aikman, C. W. "How to Play Badminton" (to be continued). *Squash-Badminton* I: (December, 1933), 22–3.
"A Standard Court" (Editorial). (Squash) *Squash-Badminton* I: (December, 1933), 15.
Danzig, A. "Review of the Court Games Season." *Sportsman* XIII: (April, 1933), 41, 58, 60.
Dower, G. "Can Squash Rackets Be Saved?" *Squash-Badminton* I: (December, 1933), 26–7.
Fulton, H. M. "Tennis Gets Under Way." *Ath. Jr.* XIII: (June, 1933), 20–2.
Jacobs, H. H. *Modern Tennis.* Indianapolis, Bobbs-Merrill Co. 1933, 220 pp. $2.50.
Jones, W. R. "The Oldest Badminton Club in the World." *Squash-Badminton* I: (Nov.-Dec., 1933), 10–1.
Maynard, V. Preliminary Analysis of the Game of Tennis. The Reliability of Certain Skill Tests and Determination of Practice Board Areas for Serve and Drive. Grad. Thesis, Wellesley, 1933.
Rutishauser, J. "Tennis Drill." *Mind & Body* XL: (Sept.-Oct., 1933), 131–7.
Williams, R. N., II. "Our Best Four for France." *Sportsman* XIII: (June, 1933), 28–9, 56–8.

Track and Field

Athletic Almanac 1933. New York, Am. Sports. 1933. Spalding's Athletic Library No. 1. R. $.25.
Bartlett, L. "Throwing the Javelin." *Ath. Jr.* XIII: (June, 1933), 7–9.
Bearce, H. W. "The Metric System in Track and Field Events." *Sci. Amer.* XXXVI: (April, 1933), 385–6.
"Clinic on Hurdling Technique." *Ath.*

Jr. XIII: (May, 1933), 5–7, 40–3.
"Developing the High School Track Squad." *Ath. Jr.* XIII: (March, 1933), 42–5.
Griffith, J. L. "The College Track and Field Honor Roll." *Ath. Jr.* XIII: (February, 1933), 17–23, 26–30; (March, 1933), 5–14, 46–7.
———. "What Coaches Can Do to Make Track Meets More Interesting." *Ath. Jr.* XIII: (April, 1933), 9–10, 45.
Paddock, C. W. *Track and Field.* New York, A. S. Barnes & Co. 1933, pp. 266. $2.50.
Tuttle, W. W. "Studies in the Start of the Sprint." RESEARCH QUARTERLY IV: 2(May, 1933), 110–130.
——— and Bresnahan, G. T. "Apparatus for Measuring Starting Time in Foot Races." RES. QUAR. IV:2: (May, 1933), 110–6.
Hayden, T. C. and Walker, G. A. "Comparison of Starting Time of Runners Using Holes in the Track and Starting Blocks." RES. QUAR. IV:2: (May, 1933), 117–23.
Walker, G. A. and Hayden, T. C. "Optimum Time for Holding a Sprinter Between the 'Set' and the 'Stimulus' (Gun Shot)." RES. QUAR. IV:2: (May, 1933), 124–30.
Tenison, S. A. "Teaching a Novice to Throw the Discus." *Ath. Jr.* XIII: (March, 1933), 17–8.
Welser, L. "A Practical Electro-Mechanical Race Timer." RES. QUAR. IV: (December, 1933), 97–107.

CALISTHENICS—GYMNASTICS

Indoor Activities

Bode, R. *Expression-Gymnastics.* New York, A. S. Barnes & Co. 1933. $2.00.
Boyd, J. E. "Pepper Ball." *Mind & Body* XXXIX: (February, 1933), 324–5.
Breidenbach, M. "Swing Ball." *Mind & Body* XXXIX: (March, 1933), 373–7.
Clark, C. "Ping-Pong: and Your Job." *Ath. Jr.* XIV: (October, 1933), 28–30.
Ebner, M. "Natural Gymnastics." *Mind & Body* XXXIX: (February, 1933), 294–300.
Harshbarger, D. "Hand Soccer: An Indoor Game." *Jr. H. & P. E.* IV: (October, 1933), 48.
Laveaga, R. E. *Volley Ball: A Man's Game.* New York, A. S. Barnes & Co. 1933, pp. 218. $2.00.
Makagon, L. O. "Volley Sock: A New Mass Activity Game." *Jr. H. & P. E.* IV: (November, 1933), 54–5.
McCandless, L. "Volleyball in the Required Program." *Jr. H. & P. E.* IV: (November, 1933), 37, 61.
Metzen, G. W. "Danger's Defeat" (Pageant). *Mind & Body* XXXIX: (February, 1933), 316–9.
"Model Free Exercises for Men and Women." *Mind & Body* XL: (December-January, 1933-34), 254–6.
Murray, K. H. "Bolo Ball" (Game for High School Gymnasium). *Jr. H. & P. E.* IV: (October, 1933), 45.
Otopalik, H. "The Glory of Wrestling." *Ath. Jr.* XIV: (December, 1933), 22–5.
Packer, M. "Two Original Games" (Lane Corner Ball: Gymnasium Hockey). *Jr. H. & P. E.* IV: (November, 1933), 53–4.
Pletz, T. P. "Expressionistic Gymnastics" (Conflict of Emotions). *Mind & Body* XL: (November, 1933), 184–8.
Rodgers, M. *A Handbook of Stunts.* New York, Macmillan Co. 1933. $3.
Stoops, H. H. "A Self-Supporting Circus." *Recreation* XXVII: (June, 1933), 130–3, 157.
"Two New Games" (Speed Pin Ball). *Jr. H. & P. E.* IV: (November, 1933), 52–3.

"Core Activities"

Rath, E. "Core Activities in Physical Education." *Mind & Body* XXXIX: (January, 1933), 241–8.
Blanchard, V. S. "An Answer to Core Activities in Physical Education." *Mind & Body* XXXIX: (March, 1933), 343–5.
Lee, M. "An Answer to Core Activities in Physical Education." *Mind & Body* XL: (May-June, 1933), 51–2.
Neilson, N. P. "Comments on 'Core Activities' in Physical Education." *Mind & Body* XL: (Sept.-Oct., 1933), 114–6.
Rath, E. "Comments on Dr. Jesse F. Williams' 'Thoughts About Core Activities'." *Mind & Body* XL: (November, 1933), 145–50.

———. "About Mr. Blanchard's Opinion on Core Activities." *Mind & Body* XL: (May-June, 1933), 52–4.

Schrader, C. L. "Another Rejoinder to Core Activities in Physical Education." *Mind & Body* XL: (May-June, 1933), 49–51.

Stecher, W. A. "'Core Activities' Once More." *Mind & Body* XL: (May-June, 1933), 113–4.

Williams, J. F. "Thinking About Mr. Rath's Core Activities." *Mind & Body* XXXIX: (April, 1933), 4–7.

Dances

Abbott, M. "Jumping Jack" (Dance). *Hygeia* XI: (January, 1933), 65.

Angerman, E. E. "Dances Representing Periods in American History." *Mind & Body* XXXIX: (April, 1933), 34–9.

Ballwebber, E. *Illustrated Tap Rhythms and Routines.* Chicago, C. F. Summy Co. 1933, 96 pp. $2.50.

"Dances Representing Periods in American History." *Mind & Body* XXXIX: (February, 1933), 326–36.

Gable, M. "Syncopation Dance." *Mind & Body* XXXIX: (March, 1933), 377–80.

——— (Littlefield). "Western Ranch Dance." *Mind & Body* XXXIX: January, 1933), 276–80.

Mansfield, P. *Correctives in Dance Form.* New York. J. Fischer & Bros. 1933, 2 vols. Each $2.00.

Meekins, G. "Grecian Frieze." *Mind & Body* XL: (May-June, 1933), 102–4.

Oleson, D. E. "Scarecrow Dance." *Mind & Body* XL: (May-June, 1933), 99–100.

———. "Jingle Bells." *Mind & Body* XL: (May-June, 1933), 100–1.

———. "A Sailor's Tap." *Mind & Body* XL: (May-June, 1933), 101–2.

Schlueter, H. A. (trans. Nicolai, W. A.). "Leaping Movements as Dance Forms." *Mind & Body,* XL: (December-January, 1933–4), 247–54.

Smith, C. F. "Musical Games and Informal Dances." *Recreation* XXVI: (February, 1933), 517–9, 547.

CAMPING

Outings—Hikes

C.D.A.A. "Committee on Standards and Certificates." *Camping Magazine* V: (June, 1933), 11–2, 23, 5, 30.

Cole, D. H. "The Lone Hunter's Kit." *Field & Stream* XXXVIII: (October, 1933), 72–3.

Gordon, H. A. "Camping by Troops." *Camping Magazine* V: (June, 1933), 7–10, 21–3.

Graham, A. *The Girls' Camp.* New York, Woman's Press. 1933, 146 pp. $1.50.

"How to Tell Time by the Stars." *Pop. Sci. Mo.* (May, 1933), 122:46–7. 104.

Jackson, P. "Safe Swims for Campers." *Hygeia* XI: (July, 1933), 603–5.

Jessup, E. "What Style Tent?" *Field & Stream* XXXVIII: (May, 1933), 62–4.

Joy, B. E. "Training Courses for Camp Leadership." *Mind & Body* XXXIX: (January, 1933), 258–62.

Kilpatrick, W. H. "True and False Education: Camp vs. School." *Camping Magazine* V: (June, 1933), 2–4, 20.

Mann, P. B. *Out of Doors; A Guide to Nature.* New York, Henry Holt & Co. 1932, 448 pp. $2.00.

Merrill, W. H. "Rational Sun Bathing in Scout Camps." *Mind & Body* XL: (May-June, 1933), 64–9.

Nason, H. L. "Comfortable Winter Clothing." *Field & Stream* XXXVIII: (December, 1933), 70–2.

———. "The Camper's Axe." *Field & Stream* XXXVIII: (November, 1933), 70–2.

———. "The One-Man Outfit." *Field & Stream* XXXVIII: (August, 1933), 52–4.

Read, J. D. "Nature Activities at a Boys' Camp." *Recreation* XXVII: (July, 1933), 189–92.

Sheldon, H. H. "A Pack Trip and the Diamond Hitch." *Field & Stream* XXXVIII: (July, 1933), 56–8.

Shurcliff, S. N. "At Last, An Ideal Athletic and Sporting Camp." *Sportsman* XIV: (November, 1933), 30–1.

Solomon, B. "Is the Summer Camp a Safe and Healthful Place for Children?" *Camp Life* V: (January, 1933), 2–12, 20–4.

"Study of Camping Publications Issued by Organization Groups." *Camping Magazine* V: (June, 1933), 14–5, 29.

Van Wagenen, B. C. *Summer Camps:*

A Guide for Parents. Child Development Institute, Teachers College, Columbia University. 1933, 55 pp. $.25.

CONSTRUCTION

Plans, Equipment, Care

Bryan, M. DeG. and Handy, E. H. *Furnishings and Equipment for Residence* Halls. New York, Bur. Pubs., Teach. Coll. 1933, 95 pp. $1.00.

Hadden, G. "Designing the High School Athletic Field." *Scholastic Coach* II: 9 (May, 1933), 14–5.

Kelley, C. C. Construction and Drainage for Athletic Fields. Springfield College. Grad. thesis. 1933, 33 pp., typed.

Kiphuth, R. J. H. "Payne Whitney Gymnasium of Yale University." RES. QUAR. IV: (March, 1933), 131–9.

"Method of Removing Old Oil Finishes from Floors." *Nation's Schools* XI: (March, 1933), 78.

Spain, C. L. "A Swimming Pool Planned to Serve 2,600 Pupils." *Nation's Schools* XI: (March, 1933), 37–40.

"Waterproofing Material for Use on Wet Walls." *Nation's Schools* XI: (May, 1933), 72.

Weiss, O. H. "Why a Combined Gymnasium Stage Handicaps the School Program." *Nation's Schools* XI: 4: (April, 1933), 29–32.

DANCING

"Bibliography of the Dance and Related Arts." *Camping Magazine* V: (June, 1933), 12, 23–5, 30.

Buchanon, F. R. *Folk Dances and How to Do Them*. Des Moines, Ia. Author. 1933. $.15.

Humphrey, D. "Handwriting on the Wall" (Dancing). *Jr. of Health and Phys. Educ.* IV: (November, 1933), 18–20, 58.

Mansfield, P. and Perry, C. *Rhythmic Design*, New York, J. Fischer & Bros. 1933. $2.00.

Marsh, A. & L. *Textbook of Social Dancing*. New York, J. Fischer & Bros. 1933, 132 pp. $2.50.

Martin, J. *The Modern Dance*. New York, A. S. Barnes & Co. 1933, 123 pp. $1.50.

McCristal, K. J. "Experimental Study of Rhythm in Gymnastic and Tap Dancing." RES. QUAR. IV: (May, 1933), 63–75.

McMurray, R. J. "Rhythmic Elementary Grade Work." *Jr. of Health & Phys. Educ.* IV: (October, 1933), 48–9.

Meri, L. *Dance as an Art Form*. New York, A. S. Barnes & Co. 1933, 198 pp. $1.50. (R. M. Hughes).

Muzzey, D. M. "Group Progress of White and Colored Children in Learning a Rhythm Pattern." RES. QUAR. IV: (October, 1933), 62–70.

O'Donnell, M. P. "Let the Dance Section Serve You." *Jr. of Health & Phys. Educ.* IV: (October, 1933), 30–1.

Page, B. "Philosophy of the Dance." RES. QUAR. IV: 2 (May, 1933), 5–49.

Rath, E. "Objectives of Rhythmic Activities for Boys." *Mind & Body* XL: (May-June, 1933), 57–64. *Jr. Health & Phys. Educ.* IV: (October, 1933), 24–6, 58–9.

Shawn, T. "Principles of Dancing for Men." *Jr. Health & Phys. Educ.* IV: (November, 1933), 27–9, 60–1.

Thompson, B. L. *Fundamentals of Rhythm and Dance*. New York, A. S. Barnes & Co. 1933, 230 pp. $3.00.

DIAGNOSIS

Physical and Health Examinations

Baird, R. B. Study of Relationship between Strength and Power of Muscle Groups Used in Forearm Flexion and Grip. Grad. Thesis Wellesley College, 1933.

Bivings, L. "Heel Printing in Flat Feet: A New Method for Recording the Degree of Pronation." *American Journal Diseases Child.* XLVI: (November, 1933), 1050–3.

Deutsch, F. (Trans Zwarg, L. F.) "Symptoms of an 'Athletic Heart' and Their Prognostic Significance with Reference to Duration of Life." *Mind & Body* XL: (December-January, 1933-4), 211–6.

Martin, F. H. "Health Examinations and Cancer" (Radio Talk). *Sci. Amer.* XXXVI: (May, 1933), 460–2.

McCall, M. "Physical Education a Determining Factor in the Control of the Weight of the College Girl." RES. QUAR. IV: (December, 1933), 108–10.

Padden, E. H. "Importance of Physical Fitness to Aviators" (Reprinted).

Mind & Body XXXIX: (February, 1933), 292–3.

DISEASES

Ashburn, P. M. "Progress in Preventive Medicine." *Hygeia* XI: (March, 1933), 229–32; (April, 1933), 349–52, 369–70; (May, 1933), 446–9, 469–70; (June, 1933), 541–4; (July, 1933), 635–8, 670–1; (August, 1933), 735–8; (September, 1933), 828–31, 854–6; (October, 1933), 909–12, 952–4; (November, 1933), 1011–4.

Barber, S. R. "Quelling the Quacks." *Hygeia* XI: (February, 1933), 123–5; (March, 1933), 255–8; (April, 1933), 321–3; (May, 1933), 407–10; (June, 1933), 545–8.

Barton, M. A. "Neurasthenia" (Radio Talk). *New Eng. Jr. Med.* CCVIII: (June 22, 1933), 1325–7.

Bigelow, G. H., and Pope, A. S. "A Program for Tuberculosis Control in Massachusetts." *New Eng. Jr. Med.* CCVIII: (February 2, 1933), 251–3.

Brooks, E. B. "Importance of the Cat in the Transmission of Diphtheria." *Am. Jr. Dis. Child.* XLVI: (December, 1933), 1338–42.

Damrau, F. "Modern Surgeons Conquer Fatal Germs." *Popular Sci. Mo.* CXXII: (January, 1933), 22–4, 94–5.

Davenport, C. B. "The Inheritance of Disease." *Sci. Amer.* CXLIX: (October, 1933), 162–4.

Doull, J. A. *et al.* "Relationship of Abnormalities of the Upper Respiratory Tract to Minor Respiratory Diseases." *Amer. Jr. Hyg.* XVII: (May, 1933), 743–60.

Enders, J. F. "Use and Abuse of Serums and Vaccines." *N. E. J. Med.* CCVIII: (April 20, 1933), 855–6.

Flexner, S. "Triumph of Experimental Medicine." *Sci. Mo.* XXXVI: (June, 1933), 512–5.

Friedenwald, J., and Morrison, S. "What Is Indigestion?" *Hygeia* XI: (January, 1933), 33–7.

Friedman, E., Black, M. H., and Esserman, A. L. "Results Obtained from the Use of Various Tuberculin Tests." *Am. Jr. Dis. Child.* XLV: (January, 1933), 58–65.

Gafafer, W. M., and Doull, J. A. "Stability of Resistance to the Common Cold." *Amer. Jr. Hyg.* XVIII: (November, 1933), 712–26.

Gilman, R. L. "Incidence of Ringworm of the Feet in a University Group." *Jr. A. M. A.* C: (March 11, 1933), 715–7.

Hubbard, L. R. W. "Anterior Poliomyelitis and Its After Care." *Jr. Health & Phys. Educ.* IV: (November, 1933), 34–5, 62–3.

Kilgore, A. R. "Cancer." *Hygeia* XI: (January, 1933), 50–5.

Koehler, P. B. "The War Against Heart Disease Still Rages." *Hygeia* XI: (May, 1933), 440–3.

Lord, F. T. "Prevention and Control of Tuberculosis in the Commonwealth of Massachusetts with Special Reference to Childhood Tuberculosis and the Ten-Year Program." *New Eng. Jr. Med.* CCVIII: (February 2, 1933), 248–51.

Seham, M., and Hilbart, E. H. "Muscular Rheumatism in Childhood." *Am. Jr. Dis. Child.* XLVI: (October, 1933), 826–53.

"Shock" (Editorial). *Jr. A. M. A.* C: (January 7, 1933), 46.

Ullman, E. V. *Diet in Sinus Infections and Colds. Recipes and Menus.* New York, Macmillan. 1933, 162 pp. $2.00.

White, P. D. "Heart Disease—Then and Now." *Hygeia* XL: (October, 1933), 877–80, 950–2.

Williamson, C. S. "Heart Disease of Middle Life" (Radio Talk). *Sci. Amer.* XXXVI: (April, 1933), 368–70.

Zacks, D. "What We Have Learned from the Ten-Year Program in Massachusetts." *New Eng. Jr. Med.* CCVIII: (May 14, 1933), 1037–9.

DRUGS

Alcohol, Narcotics, Poisons

"Beer." *Hygeia* XI: (November, 1933), 1037.

"Cigarette Tar in Cancer." *Sci. Amer.* CXLVIII: (April, 1933), 245–6.

"Effects of Beer Drinking on Body Weight." *Jr. A. M. A.* C: (April 8, 1933), 1130.

Emerson, H. "Medicine Looks at Alcohol." *Survey* LX: (November, 1933), 542–5.

Himwich, H. E. *et al.* "Metabolism of Alcohol." *Jr. A. M. A.* C: (March 4, 1933), 651–4.

"Listerine and Other Mouth Washes." *Mind & Body* XXXIX: (March, 1933), 362-5.

"Milk vs. Wine" (Editorial). *Jr. A. M. A.* C: (April 29, 1933), 1340–1.

Newbury, C. L. Further Studies on Effect of Smoking on Visual Accommodation. Grad. Thesis Wellesley, 1933.

Palmer, B. L. *Syllabus in Alcohol Education.* Evanston, Ill., Signal Press. 1933, 51 pp. $.20 each.

Walker, J. E. "The Germicidal and Therapeutic Applications of Soaps." (Abstracted.) *Mind & Body* XXXIX: (March, 1933), 345–7.

EUGENICS

Evolution, Genetics, Heredity

Bryngelson, B., and Clark, T. B. "Left-Handedness and Stuttering." *Jr. Heredity* XXIV: (October, 1933), 387–90.

Cole, L. J., and Johnson, I. "Sex Control Again." *Jr. Heredity* XXIV: (July, 1933), 265–74.

"Evolution of Human Races Past and Present." *Mind & Body* XXXIX: (April, 1933), 20–2.

Guyer, M. F. "Heredity and the Constitution of the Child." *Am. Jr. Dis. Child.* XLV: (March, 1933), 601–18.

Holmes, S. J. *The Eugenic Predicament.* New York, Harcourt Brace & Co. 1933. $2.00.

Lund, S. E. T. "Determining Similarity of Triplets and Quadruplets." *Jr. Heredity* XXIV: (May, 1933), 195–7.

Pearl, R., and R. De. *The Ancestry of the Long-Lived.* Baltimore, Johns Hopkins University Press. 1933. $3.00.

Tinkle, W. J. "Deafness as a Eugenical Problem." *Jr. Heredity* XXIV: (January, 1933), 13–8.

FIRST AID

Accidents, Nursing, Etc.

Aldrich, R. H. "The Rôle of Infection in Burns." *New Eng. Jr. Med.* CCVIII: (February 9, 1933), 299–309.

Bogen, E. "Danger of Spider Bites." *Hygeia* XI: (July, 1933), 621–3.

Deaver, G. G., and Coulter, J. S. "Physical Medicine Applied to Athletic Injuries: 'Shin Splints.' " *Ath. Jr.* XIII: (April, 1933), 17–8, 46.

———. "Physical Medicine Applied to Hematoma Aurio and Anterior Metatarsalgia." *Ath. Jr.* XIII: (March, 1933), 34–8.

———. "Physical Medicine Applied to Low Back Sprain." *Ath. Jr.* XIII: (February, 1933), 30–5.

"Differences between Poison Oak and Poison Ivy." *Jr. A. M. A.* C: (May 6, 1933), 1451.

First Aid Textbook (American Red Cross). Philadelphia, P. Blakiston's Son & Co. 1933, pp. 237. $1.00.

Gartner, P. W. "First Aid Afield." *Field & Stream* XXXVIII: (September, 1933), 28–9, 58; (October, 1933), 12–3, 56; (November, 1933), 12–3, 55–6; (December, 1933), 12–3, 55–8.

Gilcrest, E. L. "Ruptures and Tears of Muscles and Tendons of the Lower Extremities." *Jr. A. M. A.* C: (January 21, 1933), 153–60.

Greeves-Carpenter, C. F. "Truth about Snakes: How Venom Is Taken To Make Anti-venom." *Nature Mag.* XXI: (April, 1933), 187–91.

Hopkins, F. S. "Fractures of the Scaphoid in Athletes." *New Eng. Jr. Med.* CCIX: (October 5, 1933), 687–90.

Jackson, C., and C. L. "Fishing in Food and Air Passages." *Hygeia* XI: (January, 1933), 46–9.

Kern, C. J. *I Go Nursing.* New York, E. P. Dutton & Co. 1933, pp. 256. $2.50.

"Shock." (Editorial.) *Jr. A. M. A.* C: (January 7, 1933), 46.

Stevens, M. A., and Phelps, W. M. *The Control of Football Injuries.* New York, A. S. Barnes Co. 1933. $3.00.

"The Treatment of Tennis Elbow" (Reprinted). *Mind & Body,* XL: (May-June, 1933), 91-2.

Warren, L. E. "Poison Ivy and Poison Sumac." *Sci. Mo.* XXXVII: (August, 1933), 169–73.

HEALTH EDUCATION

Safety, Training, Etc.

Andress, J. M., and Goldberger, I. H. *Broadcasting Health.* Boston, Ginn & Co. 1933, 401 pp. $.80.

Conrad, H. S. "Visual Aids to Health

Education." *Mind & Body* XXXIX: (January, 1933), 255–7; (February, 1933), 289–91; (March, 1933), 347–9.

Cornell, W. S. "Correlation Between Physical and Health Education and the School Medical Inspection Service." *Mind & Body* XL: (December-January, 1933-4), 200–5.

Franzen, R. *An Evaluation of School Health Procedures.* New York, American Child Health Association. 1933, 127 pp. pa. $1.15.

Gruenberg, B. C. "Motivation in Health Education." *Am. Jr. Public Health* XXIII: (January, 1933), 114–22. *Mind and Body* XXXIX: (April, 1933), 7–15.

Goldston, I. "Health Education." *Am. Jr. Public Health* XXIII: (April, 1933), 337–8.

———. "The Psycho-Physics of Health Education." *Nation's Schools* XI:2: (February, 1933), 25–8.

Hastings, E. H. "The High School Health Council in Action." *Jr. Health & Phys. Educ.* IV: (October, 1933), 3–6, 55.

Hoke, G. C. "Classroom Films in Health Teaching." *Education* LIV: (December, 1933), 223–8.

Kincaid, W. A. "Health Service Activities." *School Ex. Mag.* LII: (June, 1933), 343–4.

Latimer, J. V. "Unit Teaching in Health Education in the Secondary Schools." *Jr. Health & Phys. Educ.* IV: (October, 1933), 10–2, 56.

"Medical Side of Athletics." *Mind & Body* XL: (December-January, 1933-4), 221–2.

Oberteuffer, D. "Health Instruction Through the Physical Education Teacher." *Education,* LIII: (April, 1933), 457–60.

Perrin, E. "Physical Education: One Important Factor in Health Education." *Education* LIV: (December, 1933), 218–22.

Stephens, J. B. "The Administration of the High School Cafeteria." *Nation's Schools* XI: (May, 1933), 46.

Sullivan, J. P. "Basic Consideration of the Course of Study in Health Education." *Education* LIV: (December, 1933), 229–33.

Heating, Ventilating, Lighting

"Air Conditions and Health" (Editorial). *Jr. A. M. A.* C: (April 8, 1933), 1109–10.

"Air Conditioning and Ventilation" (Editorial). *Am. Jr. Public Health* XXXIII: (June, 1933), 603–4.

Graham, C. D. "Air Conditioning: What It Is and How It Works." *Sci. Amer.* CXLIX: (August 7, 1933), 62–3.

Hayhurst, E. R. "Air Conditioning with Relation to Comfort, Health and Efficiency." *Jr. Indust. Hyg.* XV: (March, 1933), 98.

Ross, J. R., Robertson, E. C., and Tisdal, F. F. "Effect of Sunshine Through Window Glass and Fresh Air on Resistance to Infection." *Am. Jr. Dis. Child.* XLV: (January, 1933), 81–95.

HISTORY, BIOGRAPHY, RECORDS

"Adolph Hitler Speaks on Physical Education." *Mind & Body* XL: (November, 1933), 150–2.

Armstrong, D. B. "The Tuberculosis Movement Today." *Am. Jr. Public Health* XXIII: (July, 1933), 663–7.

Blasiz, R. (trans. Foertsch, F. E.) "The Practice of Sports Among the Indians of America." *Mind & Body* XL: (December-January, 1933-4), 216–9.

Browne, B. H. "Physical Education and the Economy Wave." *Ath. Jr.* XIV: (September, 1933), 24–6.

Carter, J. J. "Physical Education at Lynnbrook." *Education,* LIII: (April, 1933), 480–3.

Foss, M. I. "Plans and Progress" (Physical Directors' Society). *Jr. Phys. Educ.* XXI: (September, 1933), 3–10.

Hutto, L. E. "Iowa Physical Education Association Pinch Hits for State Director." *Jr. Health & Phys. Educ.* IV: (November, 1933), 42, 57.

Larson, L. A. Survey of Physical & Health Education in Public Schools of Minnesota. Springfield College, Grad. Thesis, 1933. 201 pp.

"Macherey, Mathias H. In Memoriam." *Jr. Health & Phys. Educ.* IV: (October, 1933), 31.

Mueller, G. W. "A Brief Early History of Physical and Health Education in the Philadelphia Public Schools." *Mind & Body,* XL: (December-January, 1933-4), 224–31.

Nelson, C. Analysis of Trend in Objectives of Physical Education in United

States. Grad. Thesis, Wellesley College, 1933.

Ober, F. W. "Riess of the Balkans" (Biographical Sketch). *Jr. Phys. Educ.* XXX: (June, 1933), 171–3.

Otter, E. D. "Canadian Y. M. C. A. Physical Education in 1932." *Jr. Phys. Educ.* XXX: (February, 1933), 109–11.

Rogers, J. E. "Progress and Problems in Physical Education." *Mind & Body,* XXXIX: (January, 1933), 274–6.

———. "What's Happening to Physical Education?" *Jr. Health & Phys. Educ.* IV: (November, 1933), 17.

Schrader, C. L. "Basic Principles and Practices of Physical Education as Western Europe Sees Them." *Education,* LIII: (April, 1933), 453–6.

Souvenir Volume. *Intercollegiate Association of Amateur Athletes of America.* New York, 57 E. 56th St. Pub. by the Association, 1933. $1.00 plus postage.

Warden, R. D. "By Way of Disputing the Value of Present Trends in Physical Education." *Mind & Body* XL: (September-October, 1933), 109–13.

Weitzdorfer, R. Recreation and Aesthetic Culture of Youth in Germany. Springfield College Grad. Thesis, 1933. 165 pp.

Whiting, W. H. "New Public School Physical Education Procedures in Quincy, Massachusetts." *Education* LIII: (April, 1933), 484–7.

Van Liew, J. "The Older Coach and the Newer Physical Education." *Ath. Jr.* XIV: (September, 1933), 28–30.

Olympic Games

Cureton, T. K., Jr. "Observations and Tests of Swimming at 1932 Olympic Games." *Jr. Phys. Educ.* XXX: (March, 1933), 125–30.

Kirby, G. T. "The Olympic Games, The Democracy of Sport, and the Jews." *Intercollegiate Association Amateur Athletes of America Bulletin No. 21* (December 21, 1933), pp. 5–7.

Snyder, L. N. "The Olympic Hurdles." *Ath. Jr.* XIII: (January, 1933), 10–2.

Yanagita, T. "Japan in the Swimming Events at the Xth Olympic Games." *Jr. Phys. Ed.* XXX: (February, 1933), 112, 120.

HYGIENE

Mental

Alexander, F. "Meeting Emotional Depression." *Hygeia* XI: (March, 1933), 215–8, 276–7.

Anderson, M. L. "Problem of Mentally Retarded Children in Public Schools." *Jr. Educ. Sociol.* VI: (February, 1933), 248–53.

Bayley, N. *Mental Growth During the First Three Years.* Worcester, Mass., Clark Univ. Press. 1933, 92 pp. $2.00.

Emery, E. "The Content and Method of Instructing College Students in Mental Hygiene." *Mental Hygiene* XVII: (October, 1933), 590–7.

Flinn, F. B. (Chm.). "Industrial Fatigue" (Committee Report). *Am. Public Health Asso. Year Book.* (June, 1933), 74–8.

Krasnogorski, N. I. "Conditioned Reflexes in Psychopathology of Childhood." *Am. Jr. Dis. Child.* XLV: (February, 1933), 355–70.

Lewis, N. D. C. "Borderlines of Sanity." *Sci. Mo.* XXXVI: (June, 1933), 552–5.

Mental and Physical Development. Washington, Nat. Educ. Assn. 1933. $1.00.

Party, F. L. "Mental Hygiene of the Parent-Child Relationships." *Education* LIII: (May, 1933), 539–43.

Pratt, G. K. *Morale, The Mental Hygiene of Unemployment.* New York, National Committee on Mental Hygiene. 1933, 64 pp. $.25.

Strecker, E. A. "Everyday Psychology of the Normal Child." *Mental Hygiene* XVIII: (January, 1933), 65–81.

Terhune, W. B. "Individual Mental Hygiene." *Mental Hygiene* XVII: (January, 1933), 10–20.

Turner, C. E. "Testroom Studies in Employee Effectiveness." *Am. Jr. Public Health* XXIII: (June, 1933), 577–84.

Walsh, W. S. *Peace of Mind and Body.* New York, E. P. Dutton & Co. 1933, 234 pp. $2.50.

Wile, I. S. "Mental Health of the Preschool Child." *Am. Jr. Public Health* XXIII: (March, 1933), 191–7.

———. "Mental Hygiene Approach to Public Health." *Mental Hygiene* XVII: (July, 1933), 380–95.

Winslow, C.-E. A. "Industry in Medi-

cine." *Am. Jr. Public Health* XXIII: (May, 1933), 450–8.

HYGIENE

Mother and Child

Bauer, W. W. "The Health of the School Child." *Education* LIV: (December, 1933), 193–7.

Burke, J. R. "What To Do for the Cross-Eyed Child." *Hygeia* XI: (December, 1933), 1102–4.

"Child Labor and Child Health." *Am. Jr. Public Health* XXIII: (January, 1933), 72–5.

Jacobs, E. "Is Malnutrition Increasing?" *Am. Jr. Public Health* XXIII: (August, 1933), 784–8.

Lucas, W. P., and Pryor, H. B. "Every Child Is Different." *Calif. & West. Med.* XXXVIII: (March, 1933), 163.

McClow, L. L. "Lay Leadership Commission Study on the Standards and Policies for Administrating Programs in the Y. M. C. A." *Jr. Phys. Educ.* XXXI: (November-December, 1933), 19–25.

Millbury, G. S. "Teeth and Nourishment." *Jr. Pediatrics* XI: (January, 1933), 70.

Myers, J. A. *The Child and the Tuberculosis Problem.* Baltimore, Md., C. C. Thomas. 1933, 230 pp. $3.00.

Opie, E. L. "Recognition and Control of Tuberculosis of Childhood." *Am. Jr. Public Health* XXIII: (April, 1933), 305–15.

Perrin, E. "The American Child Health Association." *Jr. Health & Phys. Ed.* IV: (November, 1933), 3–5, 58.

Phair, J. T. "Effectiveness of Child Health Programs in Ontario by Survey Methods." *Am. Jr. Pub. Health* XXIII: (January, 1933), 1–9.

Renshaw, S., Miller, V. L., and Marquis, D. P. *Children's Sleep.* New York, Macmillan Co. 1933, 242 pp. $2.00.

Reynolds, M. M., and Mallay, H. "The Sleep of Young Children." *Jr. Genet. Psych.* XLIII: (December, 1933), 322–51.

Schick, B., and Rosenson, W. *Child Care Today.* New York, Greenburg Pub. Co. 1932, 320 pp. $2.50.

Schoff, F. (Mrs.) *Wisdom of the Ages in Bringing Up Children.* Philadelphia, Dorrance & Co. 1933, 394 pp. $2.50.

Solomon, J. C. "Stammering and Stuttering, The Pediatrician's Responsibility." *Am. Jr. Dis. Child.* XLV: (May, 1933), 1079–86.

"Toothpastes—Facts and Fancies." *Sci. Am.* CXLVIII: (January, 1933), 39.

Topper, A. "Standards of Basal Metabolism for Children of Retarded Growth." *Am. Jr. Dis. Child.* XLV: (June, 1933), 1203–10.

Turner, C. E. "Growth and Health." *Education,* LIV: (December, 1933), 215–8.

White, P. D. "The Heart of a Child." *Hygeia* XI: (February, 1933), 113–5.

HYGIENE

Personal and Domestic

Burke, J. R. "First Eyeglasses at Middle Age." *Hygeia* XI: (November, 1933), 971–3.

Corwin, M. J., and W. *The Science of Human Living.* San Francisco, Harr Wagner Pub. Co. 1933, 464 pp. $1.68.

Etheredge, M. L. *Health Facts for College Students.* Philadelphia, W. B. Saunders Co. 1933, 342 pp. $2.00.

Filene, E. A. "Autocare Versus Medical Care." *Mind & Body* XL: (December-January, 1933-4), 205–11.

Geraghty, E. M. "Foods: Their Selection and Preparation." *Hygeia* XI: (January, 1933), 24–6; (February, 1933), 152–5.

Hanke, M. T. *Diet and Dental Health.* Chicago, Univ. of Chicago Press. 1933, 254 pp. $4.00.

Henderson, Y. "Household Health Hazards" (Radio Talk). *Sci. Mo.* XXXVII: (July, 1933), 61–4.

Hoskins, R. G. *The Tides of Life: Endocrine Glands in Bodily Adjustment.* New York, W. W. Norton & Co. 1933, 352 pp. $3.50.

Koch, E. M. "Waist-Lines and Life-Lines" (Obesity Control). *Hygeia* XI: (December, 1933), 1081–4, 1142–3.

Langton, C. V., and Isaminger, M. P. *Practice of Personal Hygiene.* New York, Harper & Bros. 1933, 351 pp. $2.00.

Lawton, S. U. "What About Middle Age?" *Jr. Phys. Educ.* XXX: (May, 1933), 155–6.

Lusk, G. *Nutrition.* St. Louis, Hoeber. 1933. 308 pp. $2.00.

Nash, J. B. (Editor) *Physiological Health.* New York, A. S. Barnes & Co. 1933, 308 pp. $2.00.

Pitkin, W. B. "The Dividends of Health." *Hygeia* XI: (March, 1933), 225–8.

Pullman, M. J. *Foot Hygiene and Posture.* Los Angeles, Author. 1933, 200 pp. $2.00.

Rose, R. H. *How To Stay Young.* New York, Funk and Wagnalls Co. 1933, 195 pp. $1.50.

Schoenthal, L., and Brodsky, R. H. "Dietary Control and Etiology of Dental Caries." *Am. Jr. Dis. Child.* XLVI: (July, 1933), 91–104.

Strang, R. H. W. *Textbook of Orthodontia.* Philadelphia, Lea & Febiger. 1933, 756 pp.

Sydenstricker, C. *Health and Environment.* New York, McGraw-Hill Book Co. 1933, 210 pp. $2.50.

"Synthetic Colors for Candy." *Jr. A. M. A.* C: (May 6, 1933), 1453.

Wheat, F. M., and Fitzpatrick, E. T. *Everyday Problems in Health.* New York, Amer. Book Co. 1933, 440 pp. $1.25.

Wolfe, W. B. *Nervous Breakdown.* New York, Farrar & Rinehart. 1933, 240 pp. $2.50.

HYGIENE

Public

Adamson, E. I. "The Aim and Accomplishments of a Health Center Mental Hygiene Program." *Am. Jr. Public Health* XXIII: (March, 1933), 211–6.

"Adaptation to Climate" (Editorial). *Jr. A. M. A.* C: (May 6, 1933), 1430.

Andress, J. M., and Goldberger, I. H. *Broadcasting Health.* Boston, Ginn & Co. 1933, 401 pp. $.80.

Barber, S. R. "Are Foods Truthfully Labelled?" *Hygeia* XI: (July, 1933), 597–9.

Cannon, W. B. "Enemies of Society." *Sci. Mo.* XXXVI: (February, 1933), 150–64.

Carrier, W. H. "The Economics of Man-Made Weather." *Sci. Am.* CXLVIII: (April, 1933), 199–202.

Crocker, W. "Feeding the Growing Population." *Sci. Mo.* XXXVI: (January, 1933), 68–71.

Ferrell, J. A. "Health Problems Peculiar to the Southern States." *Am. Jr. Public Health,* XXIII: (May, 1933), 441–9.

Humphreys, W. J. "On the Research Work of the U. S. Weather Bureau." *Sci. Mo.* XXXVI: (May, 1933), 419–28.

Jones, D. B. "The Relative Nutritive Value of Land and Water Products." *Sci. Mo.* XXXVII: (September, 1933), 221–8.

Melander, A. L. "Fighting Insects with Powder and Lead." *Sci. Mo.* XXXVI: (February, 1933), 168–72.

"Nation's Health" (Editorial). *Jr. A. M. A.* C: (February 11, 1933), 424–5.

Richards, E. L. "Are the 'Nerves' and Badness of Childhood of Any Importance to the Field of Public Health?" *Am. Jr. Public Health* XXIII: (February, 1933), 198–205.

Schloss, O. M. "Interpretation of Some Recent Advances in Medicine in Terms of Equilibrium." *Am. Jr. Dis. Child.* XLVI: (July, 1933), 1–6.

Sydenstricker, E. *Health and Environment.* New York, McGraw-Hill Book Co. 1933, 217 pp. $2.50.

"Tiny Mosquito Fish Wise." *Sci. Amer.* CXLIX: (July, 1933), 28.

Tonney, F. O. "Loss of Active Sunshine as a Health Problem of Cities." *Am. Jr. Public Health* XXIII: (August, 1933), 775–82.

Food, Diet, Nutrition

Beach, S. "Holiday Roasting and Broiling." *Hygeia* XI: (December, 1933), 1075–7, 1141.

Berman, L. *Food and Character.* Boston, Houghton Mifflin Co. 1933, 368 pp. $3.50.

Deaver, G. G., and Coulter, J. S. "Nutrition and Physical Fitness." *Ath. Jr.* XIV: (September, 1933), 40–2; (October, 1933), 38–41.

Eddy, W. H. "Health Aspects of Fruit Beverages." *Am. Jr. Public Health* XXIII: (January, 1933), 129–37.

Fellows, C. R. "Nutritive Value of Cranberries." *Am. Jr. Public Health* XXIII: (January, 1933), 13–8.

Frisbie, W. S. "Proposed Federal Food and Drugs Act: Its Public Health Features." *Am. Jr. Public Health,*

XXIII: (December, 1933), 1232–6.
Geiger, J. C., and Gray, J. R. "'Food Poisoning' a Public Health Problem." *Am. Jr. Public Health*, XXIII: (October, 1933), 1039–44.
Geraghty, E. M. "Foods, Their Selection and Preparation." *Hygeia* XI: (March, 1933), 206–8.
Greene, M. R. "The Effects of Vitamins *A* and *D* on Anti-Body Production and Resistance to Infection." *Amer. Jr. Hyg.* XVII: (January, 1933), 60–101.
Halliday, E. G., and Noble, I. I. *How and Whys of Cooking* (Revised). Chicago, Univ. of Chicago Press. 1933, 252 pp. $3.00.
Johnson, W. M. "The Rise and Fall of Food Fads" (Reprinted). *Mind & Body* XL: (September-October, 1933), 116–20.
Lyons, D. C. "Diet and the Decay of Teeth." *Am. Jr. Nursing* XXXIII: (March, 1933), 203.
Mallman, W. L., and Cary, W. "Study of Bacterial Methods of Testing and Means of Disinfecting Water with Chlorine." *Am. Jr. Public Health* XXIII: (January, 1933), 35–44.
Myers, J. A. "Eradication of Tuberculosis from Cattle." *Hygeia* XI: (July, 1933), 617–20, 668–70.
O'Hara, D. "Our Vitamins." *New Eng. Jr. Med.* CCVIII: (May 4, 1933), 962–4.
Quigley, D. T. *Notes on Vitamins and Diets*. Chicago, Consolidated Book Pub. 1933, 128 pp. $1.00.
Straka, R. P., and James, L. N. "Frozen Vegetables." *Am. Jr. Public Health* XXIII: (July, 1933), 700–3.

Milk

"Changes in Milk Protein after Boiling." *Jr. A. M. A.* C: (February 4, 1933), 358–9.
Erf, O. "The Most Perfect Milk Possible." *Sci. Amer.* CXLVIII: (April, 1933), 210–11.
Hardenbergh, J. G., and Wilson, L. T. "Production of Anti-Rachitic Milk by the Feeding of Dairy Cattle." *Am. Jr. Public Health* XXIII: (March, 1933), 230–6.
Lininger, F. F. "Relation of the Use of Milk to the Physical and Scholastic Progress of Undernourished School Children." *Am. Jr. Public Health* XXIII: (June, 1933), 555–60.
Supplee, G. C. "Anti-Rachitic Activation of Milk by Direct Irradiation with Ultra-violet Rays." *Am. Jr. Public Health* XXIII: (February, 1933), 225–9.
Tobey, J. A. "Minerals in Milk." *Sci. Amer.* CXLIX: (July, 1933), 24–5.
———. "Powdered Milk." *Hygeia* XI: (February, 1933), 140–2.
———. "Vitamin *D* Milk." *Hygeia* XI: (August, 1933), 694–6.
Zucker, T. F. "The Addition of Vitamin *D* Concentrate to Milk." *Am. Jr. Public Health* XXIII: (January, 1933), 10–11.

HYGIENE

Rural

Allee, W. C., and Carey, W. E. "Shall We Move to the Country?" *Sci. Mo.* XXXVI: (June, 1933), 527–38.
Freeman, A. W. (Editor) *A Survey of Rural Health Services*. New York Commonwealth Fund. 1933, 233 pp. $2.50.
Hommon, H. B. (Chm.) "Survey of Thirty-Five Demonstration Farm Sewage Disposal Plants." *Am. Public Health Ass'n Year Book* (June, 1933), 116–9.

HYGIENE

School

"Avocational Education." *Recreation* XXVII: (September, 1933), 269–72; 299–300.
Cozens, F. W. "Determination of Efficiency of Group Learning Under Different Incentive Conditions and Modes of Activity." RES. QUAR. IV:2 (May, 1933), 50–62.
Franzen, R. *An Evaluation of School Health Procedures*. New York, Am. Child Health Ass'n. 1933, 171 pp. $1.15.
Frostic, F. W. "How Do You Buy Your Coal—By Weight or by B.T.U.'s?" *Nation's Schools* XII:2 (August, 1933), 55–7.
Henderson, R. "Colleges and Health." *Hygeia* XI: (September, 1933), 777–9.
Hildreth, G. "Adolescent Interests and

Abilities." *Jr. Genet. Psych.* XLIII: (September, 1933), 65–93.

Irons, G. E. "Methods Used in Determining Room Size in High Schools." *Nation's Schools* XI: (January, 1933), 43–8.

Jones, L. R., and Bixler, H. H. "Impaired Hearing May Be Your Pupil's Difficulty." *Nation's Schools* XII:2 (August, 1933), 33–6.

McGee, N. W. "Student Health Service." *Jr. Higher Education* IV: (December, 1933), 457–9.

Norris, A. C. "Hard-of-Hearing Children." *Jr. Educ. Sociol.* VI: (February, 1933), 323–30.

Pittman, M. S. "What Are Educational Frills?" *Jr. Health & Phys. Ed.* IV:8 (October, 1933), 7–9, 58.

Richmond, W. V. *The Adolescent Boy.* New York, Farrar & Rinehart. 1933, 233 pp. $2.50.

Rogers, J. E. "Programs Based upon Educational Procedures." *Mind & Body* XL: (May-June, 1933), 83–90.

Smiley, H. E. "Books, Shall They Be Sterilized?" *R. I. Med. Jr.* XVI: (January, 1933), 5.

Thom, D. A. *Guiding the Adolescent.* Washington, D. C., Dept. Labor, Child Bur. 1933, 94 pp. 10 cents. Bur. Pub. No. 225.

Thomburgh, W. B. "Getting Clean at the Seaforth School." *Nation's Schools* XI: (January, 1933), 33–8.

Warner, E. A. "The Effect of Training on the Adolescent and an Attempted Scientific Evaluation of Selected Activities." RES. QUAR. IV: (October, 1933), 143–52.

White, W. A. "The Hygiene of Adolescence." *Am. Jr. Public Health* XXIII: (February, 1933), 206–10.

Yarmolenke, A. "The Motor Sphere of School Age Children." *Jr. Genet. Psych.* XLII: (June, 1933), 298–316.

HYGIENE

Social

Cox, I. "Is Sexual Abstinence Harmful?" *Sci. Amer.* CXLIX: (September, 1933) 109, 135–41.

Evans, C. B. S. *Man and Woman in Marriage.* Chicago, Bruce-Roberts. 1932, 113 pp. $2.00.

Everett, M. S. *Hygiene of Marriage: Detailed Consideration of Sex and Marriage.* New York, Vanguard Press. 1933, 262 pp. $3.00.

Groves, E. R. *Marriage.* New York, Henry Holt & Co. 1933, 552 pp. $3.50.

Little, C. C. "Birth Control and Bigotry." *Sci. Amer.* CXLVIII: (June, 1933), 309–11.

Parshley, H. M. "Sexual Abstinence as a Biological Question." *Sci. Am.* CXLVIII: (May, 1933), 283–4, 298–300.

Rice, T. B. "Sex Education." *Hygeia* XI: (July, 1933), 585–8; (August, 1933), 722–6; (September, 1933), 801–4; (October, 1933), 923–6, 954–5; (November, 1933), 1005–8, 1048; (December, 1933), 1105–8, 1143–4.

ORGANIZATION—ADMINISTRATION

Brace, D. K. "The Handling of Objectives in Physical Education." *Jr. Health & Phys. Ed.* IV: (November, 1933), 21–3, 56.

Brammell, P. R. *Intramural and Interscholastic Athletics.* Office of Educ. 1933, 143 pp. $.10.

Burpee, R. H. "Progressive Education and Promotion of Athletic Meets." *Jr. Phys. Educ.* XXX: (January, 1933), 85–9, 97.

Butler, A. "A Solution of the Locker Assignment Problem." *Mind & Body* XL: (November, 1933), 152–4.

Clarke, H. "Conducting an Intramural Athletic Program with Limited Facilities." *Ath. Jr.* XIII: (April, 1933), 36–40.

Clark, E. *How to Budget Health.* New York, Harper. 1933, 328 pp. $4.00.

Cooke, M. E. "Intramural Program for Elementary School." *Jr. Health & Phys. Ed.* IV: (October, 1933), 46–7.

Davis, P. L. "Outing Club as an Intramural Activity." RES. QUAR. IV: (March, 1933), 106–9.

Deaver, G. G., and Coulter, J. S. "Organization of a Department of Physical Medicine in Schools and Colleges." *Ath. Jr.* XIII: (May, 1933), 43–7.

Fletcher, R. H., and Clark, A. E. "Application of the Principles of Water Purification to the Control of Swim-

ming Pools." *Am. Jr. Public Health* XXIII: (May, 1933), 407–25.

Frostic, F. W. "The Gymnasium Floor—How to Take Care of It." *Nation's Schools* XII:3 (September, 1933), 59–60.

Hayden, T. C. "An Intramural Program in a Small College." *Ath. Jr.* XIV: (October, 1933), 32–4.

High School Curriculum Reorganization. North Central Ass'n Colleges and Secondary Schools. 1933, 395 pp.

Hill, L. S. "Self-Education Through Physical Activities" (player controlled activities). *Education* LIII: (April, 1933), 475–7.

Hughes, W. L. "Administration of Health and Physical Education for Men in Colleges and Universities." Res. Quar. IV: (March, 1933), 140–4.

Intercollegiate Association of Amateur Athletes of America. I. C. A. A. A. A., 57 E. 56th St., New York City. 1933, 476 pp. $1.00 plus postage.

Kerr, A. M. "Administrative Methods in Health Education." *Jr. Health & Phys. Ed.* IV: (November, 1933), 14–6, 59–60.

Lindwall, R. E. *Intramural Activities, Their Organization and Administration in the Junior and Senior High School.* Pub. Privately, Manitowoc, Wis. 1933, 88 pp. $1.

Mueller, G. W. "Ability Grouping and Individualization in Physical Education in the Philadelphia Public Schools" (To be continued). *Mind & Body* XL: (December-January, 1933-4), 193–200.

Nordley, C. L. "A Rating Scale for the Selection of Athletic Managers." Res. Quar. IV: (December, 1933), 111–7.

Olds, L. W. "Scoring System for Cross Country." *Jr. Health & Phys. Ed.* IV:8 (October, 1933), 34–5, 61–2.

Roberts, M. "A Simple Point System for Grading in Physical Education." *Jr. Health & Phys. Ed.* IV: (November, 1933), 51–2.

Samborski, A. W. "House Athletics at Harvard." Res. Quar. IV: (March, 1933), 99–105.

Stock, G. E. "Grading of Physical Directors' Society Members." *Jr. Phys. Educ.* XXX: (April, 1933), 148–9.

"Volunteer Leadership in the Recreation Movement." *Rec.* XXVI: (January, 1933), 480–6, 499.

Weber, E. E. "Management and Care of Athletic Equipment." *Ath. Jr.* XIII: (February, 1933), 36.

Whitten, C. W. "National Federation of State High School Athletic Associations." *Jr. Health & Phys. Ed.* IV: (May, 1933), 6–7.

PHYSIOLOGY

Anatomy

Adrian, E. D., and Gelfon, S. "Rhythmic Activity in Skeletal Muscle Fibers." *Jr. Physiol.* LXXVIII: (June, 1933), 271–87.

Deighton, T. "Physical Factors in Body Temperature. Maintenance and Heat Elimination." *Physiol. Revs.* XIII: (October, 1933), 427–65.

"Diet and Growth" (Reprinted). *Mind & Body* XL: (December-January, 1933–4), 242–4.

Dill, D. B., Bock, A. V., and Edwards, H. T. "Mechanisms for Dissipating Heat in Man and Dog." *Am. Jr. Physiol.* CIX: (April, 1933), 36–43.

Evans, C. "Investigation of the Toxic Effects of Large Amounts of Sugar in the Blood." *Jr. Physiol.* LXXVII: (January, 1933), 189–93.

Gettler, A. O., and Mattice, M. R. "The 'Normal' Carbon Monoxide Content of the Blood." *Jr. A. M. A.* C: (January 14, 1933), 92–7.

Grollman, A. *Cardiac Output of Man in Health and Disease.* Springfield, Ill., C. C. Thomas Co. 1932, 325 pp. $4.00.

Hellebrandt, F. A. "Projects in Applied Physiology." Res. Quar. IV: (May, 1933), 76–93.

Henderson, Y. "Volume of Circulation and Its Regulation by the Venopressor Mechanism" (Reprinted). *Mind & Body,* XXXIX: (March, 1933), 350–6.

Jackson, C. O. "An Experimental Study of the Effect of Fear on Muscular Coordination." Res. Quar. IV: (December, 1933), 71–80.

Karpovich, P. V. *Laboratory Manual for Physiology.* Springfield, Mass. 1933, 52 pp. (Planographed) Pub. by Author. Springfield College. $1.50.

Koch, F. C. "Biochemistry—Chemistry of Living Matter." *Hygeia* XI: (July, 1933), 628–31.

Lambeth, M., and Lanier, L. H. "Race Differences in Speed of Reaction." *Jr. Genet. Psych.* XLII: (June, 1933), 255–97.

Laurens, H. *Physiological Effects of Radiant Energy*. New York, Chemical Catalog Co. 1933, 593 pp. $6.00.

Lucas, W. P., and Pryor, H. B. "The Body-Build Factor in the Basal Metabolism of Children." *Am. Jr. Dis. Child.* XLVI: (November, 1933), 941–8.

Mathews, B. H. C. "Nerve Endings in Mammalian Muscle." *Jr. Physiol.* LXXVIII: (April, 1933), 1–53.

Meldrum, N. U., and Roughton, F. J. W. "The State of Carbon Dioxide in Blood." *Jr. Physiol.* LXXX: (December 5, 1933), 143–70.

Meyers, L. H., and Welton, A. D. *What We Are and Why* (Endocrine Glands). New York, Sears Pub. Co. 1933, 340 pp. $3.00.

Ogle, C., and Mills, C. A. "Animal Adaptation to Environmental Temperature Conditions." *Am. Jr. Physiol.* CIII: (March, 1933), 606–12.

Nash, J. B. *Physiological Health*. New York, A. S. Barnes & Co. 1933, 308 pp. $2.00.

Rahn, O. "Problems in Growth Chemistry." *Quarterly Review of Biology* VIII: (March, 1933), 77–91.

Redfield, A. C. "The Evolution of the Respiratory Function of the Blood." *Quarterly Review of Biology* VIII: (March, 1933), 58–76.

Skinner, G. A. "The World's Most Efficient Pump" (The Human Heart). *Sci. Amer.* CXLVIII: (June, 1933), 330–1.

Speidel, C. C. "The Growth and Repair of Nerves." *Sci. Mo.* XXXVII: (July, 1933), 47–9.

Stiles, P. G. "Recent Progress in Physiology." *New Eng. Jr. Med.* CCVIII: (March 2, 1933), 492–4.

Wegener, A. B. "Illustrations of Large-Muscle Groups and Their Action." *Jr. Health & Phys. Ed.* IV: (November, 1933), 40.

Weiss, P. "Influence of Stretch on the Length of Survival of Isolated Muscles." *Am. Jr. Physiol.* CVI: (October, 1933), 156–9.

Wells, G. "Effect of External Temperature Changes on Blood Pressure, Physical Efficiency, and Body Temperature." RES. QUAR. IV: (March, 1933), 162–76.

PHYSIOLOGY OF EXERCISE

Baldwin, F. M., and Shaw, R. J. "Variations in Metabolic Levels as Shown by Oxygen Consumption of Football Athletes Throughout a Playing Season." RES. QUAR. IV: (December, 1933), 26–30.

"Effects of Exercise" (Editorial). *Jr. A. M. A.* C: (February, 25, 1933), 578–9.

"Exercise and Gastric Digestion" (Editorial). *Jr. A. M. A.* C: (January 4, 1933), 118–9.

Fenn, W. O., and Latchford, W. B. "The Effect of Muscle Length on the Energy for Maintenance of Tension." *Jr. Physiol.* LXXX: (December 5, 1933), 213–9.

Gelfan, S., and Bishop, G. H. "Conducted Contractures without Action Potentials in Single Muscle Fibers." *Am. Jr. Physiol.* CIII: (January, 1933), 237–43.

———. "The Submaximal Responses of the Single Muscle Fiber." *Jr. Physiol.* LXXX: (December 30, 1933), 285–95.

Gemmill, C. L., and Ribeiro, B. A. "Study of the Phosphates in the Blood after Strenuous Muscular Exercise." *Am. Jr. Physiol.* CIII: (February, 1933), 367–73.

Gould, A. G., and Dye, J. A. *Exercise and Its Physiology*. New York, A. S. Barnes & Co. 1933, 434 pp. $3.00.

Jacobs, M. S. "Shortness of Breath." *Hygeia* XI: (May, 1933), 418–20.

Jordan, H. E. "The Structural Changes in Striped Muscle During Contraction." *Physiol. Revs.* XIII: (July, 1933), 301–24.

"Loss of Salt and Water by Perspiration." *Jr. A. M. A.* C: (March 25, 1933), 989–90.

McNamar, Q. "Twin Resemblances in Motor Skills and the Effect of Prac-

tice Thereon." *Jr. Genet. Psychol.* XLII: (March, 1933), 70–97.
Ritchie, A. D. "Theories of Muscular Contraction." *Jr. Physiol.* LXXVIII: (June, 1933), 322–34.
Sacks, J., and W. C. "Fundamental Chemical Changes in Contracting Mammalian Muscle." *Am. Jr. Physiol.* CV: (July, 1933), 151–61.
Schneider, E. C. *Physiology of Muscular Activity*. Philadelphia, W. B. Saunders Co. 1933, 401 pp. $2.75.
"Sources of Quick Muscle Energy." *Sci. Amer.* CXLIX: (September, 1933), 126–7.
Steinhaus, A. H "Chronic Effects of Exercise." *Physiol. Revs.* XIII: (January, 1933), 103–47.
Stevens, H. C., and Snodgrass, J. M. "A Quantitative Study of the Changes in Power During Muscular Contraction." *Am. Jr. Physiol.* CIV: (May, 1933), 276–90.
Talbott, J. H. "Effects of Fatigue" (Radio Talk). *New Eng. Jr. Med.* CCVIII: (March 23, 1933), 658–9.

PHYSIOTHERAPY

Massage, Corrective Exercises

"Bibliography of Corrective Procedures." *Camping Magazine* V: (June, 1933), 12.
Atkinson, R. K. "Athletics for the Atypical" (Reprinted). *Hygeia* XI: (February, 1933), 118–22.
Carver, M. "Motivation of Child Interest in Corrective Physical Education in Elementary Schools." *Jr. H. & P. E.* IV: (October, 1933), 27–9, 52–5.
Emerson, H. "Sunlight and Health." *Am. Jr. Public Health* XXIII: (May, 1933), 437–40.
Gaenslen, F. J. "Who Should Teach Physiotherapy?" *Jr. A. M. A.* C: (May 6, 1933), 1435.
Ingram, M. L. "Trends in Education of Crippled Children." *Jr. Educ. Sociol.* VI: (February, 1933), 339–47.
Ireland, C. L. *Modern Physical Therapy Technique*. Author, Columbus, Ohio, 1932, 412 pp. $7.00.
Johnson, W. T. "Air Therapy." *Arch. Phys. Therap. X-Ray Radium* XIV: (January, 1933), 19–22.
Krida, A. "After-Care of Infant Paralysis." *Hygeia* XI: (December, 1933), 1117–9.
Karnser, H. T., and Goldblott, H. "Evaluation of Methods Used in Physical Therapy." *Jr. A. M. A.* C: (May 13, 1933), 1495–6.
Krusen, F. H. *Light Therapy*. New York, Paul B. Hoeber, 1933, 186 pp. $3.50.
Laurens, H. *Physiological Effects of Radiant Energy*. New York, Chemical Catalog Co. 1933, 610 pp. $6.00.
Pemberton, R. "The Use of Massage in Internal Medicine" (Reprinted). *Mind & Body* XL: (November, 1933), 178–84.
Smart, M. *Principles of Treatment of Muscles and Joints by Graduated Muscular Contractions*. New York, Oxford Univ. Press. 1933, 217 pp. $3.75.
Young, C. H. "How Corrective Physical Education is Helping These Boys." *Nation's Schools* XI: (January, 1933), 55–6.

PLAY—RECREATION

Leisure Time

Busch, H. M. "Contributions of Recreation to the Development of Wholesome Personality." *Recr.* XXVII: (October, 1933), 307–11.
Butler, G. D. (Compiler) "Standards for a Recreation System in a Community of 100,000." *Recr.* XXVI: (February, 1933), 532–4, 548.
Greenwood, E. D. "Recreations and Amusements of the Colonial Period." *Recr.* XXVII: (April, 1933), 28–34, 47.
Hermann, E. "The Place of Play and Recreation in the Community." *Education* LIII: (April, 1933), 478–80.
Hicks, G. T. "Getting the Values out of the School Social." *Recr.* XXVII: (September, 1933), 273–5, 300–1.
Hobbs, M. F. *How to Produce a Play*. New York, National Recreation Ass'n. 1933, 71 pp. $.50.
Kelly, M., and Drew, G. "Pageantry, a Vehicle of Self-Expression." *Jr. H. & P. E.* IV: (October, 1933), 13–7, 56–8.

Kieffer, J. C. "Handcraft in Playgrounds and Recreation Centers." *Mind & Body* XXXIX: (April, 1933), 16–9; XL: (May-June, 1933), 76–9.

Knapp, J. S. "How to Produce a Play." *Recr.* XXVII: (June, 1933), 134–5; (July, 1933), 179, 203–4; (September, 1933), 278; (October, 1933), 323, 347–8.

Lammey, H. "Providing Recreation in the Township High School." *Jr. H. & P. E.* IV: (November, 1933), 36, 55.

Lies, E. T. *The New Leisure Challenges the Schools.* Washington, D. C. Nat. Ed. Ass'n. 1933, 326 pp. $2.00.

Lundberg, G. A. "Training for Leisure" (Reprint). *Recr.* XXVII: (September, 1933), 259–64.

Martin, L. J., and Gruchy, C. *Sweeping the Cobwebs* (Recreation). New York, Macmillan Co. 1933, 183 pp. $1.50.

Mueller, G. W. "Series of Radio Programs Given by Public School Summer Playgrounds." *Mind & Body* XL: (May-June, 1933), 54–5.

Noren, A. T. "Some Guiding Principles in Game Selection." *Recr.* XXVII: (September, 1933), 280–3.

Patri, A. "Leisure." *Recr.* XXVII: (March, 1933), 555–7.

"Recreation and Recovery." *Recr.* XXVII: (October, 1933), 329, 349.

Recreation and Unemployment. New York, Nat'l Recr. Ass'n. 1933, 58 pp. 25 cents.

Rogers, J. E. "Leisure as a Challenge." *Mind & Body* XL: (November, 1933), 162–4.

Sharp, L. B. "Need for Recreation in Times of Depression." *Recr.* XXVII: (July, 1933), 193–5.

Steiner, J. F. *Americans at Play: Recent Trends.* New York, McGraw-Hill Book Co. 1933, 201 pp. $2.50.

Storey, C. J. "Hot Weather Recreation for Adults." *Recr.* XXVII: (October, 1933), 330–2.

Vinall, W. G. "Today's Nature Education and Tomorrow's Leisure." *Recr.* XXVII: (April, 1933), 17–9, 43–4.

White, H. "Leisure-Time Activities and Character Building." *Mind & Body* XXXIX: (April, 1933), 1–4.

Wilkins, E. H. "The Pattern of Leisure" (Reprinted). *Recr.* XXVII: (October, 1933), 312–4, 345.

Leisure-Time Activities

"Activities for Unemployed and Unoccupied Young People." *Recr.* XXVII: (April, 1933), 9–15, 42.

Alexander, V. C. *Popular Book of Entertaining: Games and Plays for Every Occasion.* Philadelphia, J. B. Lippincott. 1932, 127 pp. $1.00.

Benatre, E. "Canoeing and Tennis in a County Park System." *Recr.* XXVII: (July, 1933), 174–5, 202–3.

Blackstock, J. "The Enchanted Island: An Experiment in Play." *Jr. H. & P. E.* IV: (November, 1933), 8–13, 63.

Board, H. "Plays and Pageants for the Playground." *Recr.* XVII: (July, 1933), 172–3, 202.

Breen, M. J. "A Bag o' Tricks Party." *Recr.* XXVI: (March, 1933), 565–8, 590–1.

Eastwood, F. "Playing in the Water." *Recr.* XXVII (July, 1933), 169–71.

Farrar, J. *Indoor and Outdoor Plays for Children.* New York, Noble & Noble. 1933. 201 pp. $2.00.

Graves, C. M. "Tin-Can Craft on the Playground." *Recr.* XXVII: (July, 1933), 176–8, 202.

Hedges, G. G. *Games for Small Lawns.* Philadelphia, J. B. Lippincott. 1933. 132 pp. $1.25.

Kaiper, D. B. "Study of Distribution of Clubroom Games in Boys' Department of Syracuse Y.M.C.A." *Jr. H. & P. E.* IV: (October, 1933), 49–50.

Kieffer, J. C. "Handcraft in Playgrounds and Recreation Centers." *Mind & Body* XXXIX: (March, 1933), 369–73.

Lippincott, J. W., and Roberts, G. J. *Nature Craft Creatures.* Philadelphia, J. B. Lippincott Co. 1933. 134 pp. $1.50.

Martin, J. A. (Compiler). *Recreational Games and Programs.* New York, Nat'l Recr. Ass'n. 1933. 62 pp. $.50.

Murray, R. K. "A Progressive Contest Party." *Recr.* XXVII: (July, 1933), 187–8, 205–6.

"Party Suggestions for Hallowe'en." *Recr.* XXVII: (October, 1933), 326–8, 348.

Post, J. H., and Shirley, M. J. *Selected Recreational Sports for Girls and Women.* New York, A. S. Barnes & Co. 1933. 132 pp. $2.00.

Stanley, B. *Party Games for All Occasions.* Philadelphia, J. B. Lippincott Co. 1933. 122 pp. $1.00.

Weir, L. H. "Planning the Picnic Grounds." *Recr.* XXVII: (June, 1933), 126–9, 156–7.

POSTURE

Carey, E. J. "Scoliosis" (Abstract). *Mind & Body* XXXIX:22–4.

Christenson, C. H. "An Improved Technique for Measuring Antero-Posterior Posture." Res Quar. IV: (December, 1933), 89–96.

Deaver, G. G. "Posture and Its Relation to Mental and Physical Health." Res. Quar. IV: (March, 1933), 221–8.

Good Posture in the Little Child. Washington, D. C., Child Bur. 1933. Pub. No. 219. 25 pp. $.05.

Heuer, F. "The Theory of the Origin of Scoliosis" (Reprinted). *Mind & Body* XL: (November, 1933), 154–61.

Jones, J. A. "Effect of Posture Work on Health of Children." *Am. Jr. Dis. Child.* XLVI: (July, 1933), 148–54.

McKenzie, R. T. "Posture." *Hygeia* XI: (November, 1933), 996–9, 1044–6.

Spargo, E. L. Study of Posture of College Undergraduates. Grad. Thesis, Wellesley College. 1933.

Thompson, C. M. Study of Posture in Walking. Grad. Thesis. Wellesley College. 1933.

PROGRAMS—SYLLABI

Blanchard, V. S. "Analysis of Likes and Dislikes of Boys and Girls in Health Education Activities." Res. Quar. IV: (March, 1933), 238–45.

Danielson, A. J. Health and Physical Education for the Schools of India. Springfield College, Grad. Thesis. 1933. 447 pp.

Lane, P. W. "Today's Program in Health Education — and Tomorrow's." *Nation's Schools,* XII: (July, 1933), 13–8.

LaPorte, W. R. (Chm.). "Report of Committee on Curriculum Research." Res. Quar. IV: (March, 1933), 145–61.

Lapp, V. W. "Pupil Objectives in High School Physical Education." Res. Quar. IV:2 (May, 1933), 157–67.

Laveaga, R. E. "Using Volleyball as a Part of Regular Class Play." *Jr. Phys. Ed.* XXX: (January, 1933), 92–3.

Lewniski, I. Student Interest and Attitudes Concerning Physical Education. Grad. Thesis. Wellesley College. 1933.

Littlefield, K. S. "Y.M.C.A. Program for Boys." *Jr. Phys. Educ.* XXX: (January, 1933), 90–1, 97.

Metcalf, H. G. "Individual Physical Education Program." Res. Quar. IV: (March, 1933), 110–7.

Rogers, J. E. "A Graded Physical Education Program." *Mind & Body* XXXIX: (March, 1933), 359–62.

———. "Programs Based on Individual Needs." *Mind & Body* XXXIX: (April, 1933), 26–9.

Rooks, R. "Y.M.C.A. Program of Physical Education for Men. Determined by Study of Expressed Preference of Both Members and Non-Members." *Jr. Phys. Educ.* XXX: (February, 1933), 103–8, 120.

Sanders, E. "A Summer Activity Program for Junior High Schools." *Recr.* XXVII: (September, 1933), 276–7, 301.

Slagle, E. C. *Games and Field Day Programs.* Albany, N. Y., State Department of Mental Hygiene. 1933. 75c.

Smith, W. R. "Questionnaire Study in Regard to the Attitudes of Men Students Toward the Required Physical Education Program." Res. Quar. IV: (March, 1933), 246–8.

Streit, W. K. "Interpreting the Health and Physical Education Program to the Public." *Jr. H. & P. E.* IV: (May, 1933), 36, 62.

Wilson, H. *et al.* "A Series of Exercises for General Abdominal Conditioning." *Jr. Phys. Educ.* XXX: (April, 1933), 145–7.

RELATIONSHIPS

Educational, Character, Social

Adams, E. W. "Building Character Through Pupil Participation" (Re-

printed). *Mind & Body* XXXIX: (March, 1933), 337–9.

Cooper, J. A. The Effect of Participation in Athletics Upon Scholarship Measured by Achievement Tests. Grad. Thesis. Pennsylvania State College. 1933. 23 pp. (Planographed).

Hackenberg, J. L., Yeich, E. B., and Weisenfluh, L. A. "The Effect of Athletics on Certain Character Studies." *Jr. Educ. Sociol.* VII: (December, 1933), 264–8.

Maney, C. A. "Grades of College Football Students." *Sch. & Soc'y.* XXXVIII: (September 2, 1933), 307–8.

Perry, J. M. "Differences Between High School Major Sports Participants and Non-Athletes in Certain Characteristics." *High School Teacher* IX: (November, 1933), 239–40.

Rodgers, M. A. "Mental Training Through Motor Activity." *Jr. H. & P. E.* IV: (May, 1933), 34–5, 60.

Rogers, F. R. "The Relation of Physical Education to the Health Aim." *Education* LIII: (April, 1933), 449–53.

Rogers, J. E. "Education in Physical Education." *Mind & Body* XXXIX: (February, 1933), 312–6.

Taylor, W. S. "Physical Education and Good Citizenship." *Jr. H. & P. E.* IV: (November, 1933), 6–7, 62.

Thisted, M. N. "A Study of the Relationship Between Participation in College Athletics and Vocational Success." Res. Quar. IV: (October, 1933), 5–20.

Thoma, E. "Body and Soul Relationships in Physical Education" (Reprinted). *Mind & Body* XXXIX: (February, 1933), 302–4.

SAFETY IN PHYSICAL EDUCATION

Billings, C. "Can School Days Be Safe Days?" *Hygeia* XI: (September, 1933), 815–8.

Burnett, J. H., and O'Brien, J. "Survey of Football Injuries in the High Schools of Massachusetts." Res. Quar. IV: (October, 1933), 91–8.

Lloyd, F. S. *Safety in Physical Education in Secondary Schools.* Nat'l Bur. Casualty & Surety Underwriters, New York. 1933. 192 pp. $1.25.

———. "Safety in Secondary School Physical Education." Res. Quar. IV: (March, 1933), 5–8.

McCormack, G. R. "Safeguarding the Athlete's Health." *Hygeia* XI: (October, 1933), 904–8.

Neilson, N. P. "The Nature, Frequency, and Age Incidence of Injuries in Interscholastic Football." Res. Quar. IV: (October, 1933), 78–90.

Prohaska, C. J. "Accident Prevention Should Be a Part of the Curriculum." *Nation's Schools* XII:3: (September, 1933), 39–44.

TEACHER TRAINING

Professional Qualifications, Certification

Andreas, L. P. "Double-Major Programs in Teacher Training in Physical Education." Res. Quar. IV: (March, 1933), 78–90.

Baylor, A. S. "Health Training for Teachers." *Education* LIV: (December, 1933), 198–204.

Davies, J. E. "What Are the Traits of a Good Teacher from the Standpoint of Junior High School Pupils?" *Sch. & Soc'y.* XXXVIII: (November 11, 1933), 649–52.

Fauver, E. "Worth of Varsity Athletic Coaches as Instructors in Physical Education." Res. Quar. IV: (March, 1933), 44–50.

Guggenheimer, F. L. "A Camp Director Seeks an Education." *Camping Magazine* V: (January, 1933), 15–7.

Horton, C. E. "A Report on Teaching Combinations in Physical Education in the High Schools of Illinois." Res. Quar. IV: (October, 1933), 51–61.

McKinstry, H. "Evaluation of Qualities and Capacities Essential to Teaching Success." Res. Quar. IV: (December, 1933), 5–25.

Meredith, W. F. "Some Trends in the Acceptance of Credits in Health and Physical Education for College Entrance." Res. Quar. IV: (March, 1933), 68–77.

Moore, H. E. "A Study of the Subjects Taught by 1037 Teachers of Health and Physical Education in Public

High Schools of Indiana." RES. QUAR. IV: (October, 1933), 29–37.

Neilson, N. P. "Report of Committee on Teacher Training in Physical Education in the United States." RES. QUAR. IV: (March, 1933), 51–67.

Partridge, D. A. E., and Smith, C. F. "Find Your Leader and Train Him!" *Recr.* XXVII: (September, 1933), 265–8, 298–9.

Prescott, D. A. *The Training of Teachers.* New Brunswick, N. J., Rutgers Univ. 1933. 35 pp.

Rogers, J. E. "What Superintendents of Schools Expect of Health and Physical Education Teachers." *Mind & Body* XL: (November, 1933), 169–71.

Street, C. W. "A Study of Suitable Majors or Minors That Are Used in Combination with Physical Education." RES. QUAR. IV: (October, 1933), 38–50.

Welch, F. "Outstanding Types of Camp Leadership Training." *Camping Magazine* V: (January, 1933), 14, 17.

Yocom, C. C. State Certification in Secondary Schools of United States. Springfield College. Grad. Thesis. 1933. 188 pp.

VITAL STATISTICS

Births, Deaths, Sickness

Arner, G. B. "Statistics and the Health Officer." *Am. Jr. Pub. Health* XXIII: January, 1933), 28–34.

Bigelow, G. H., and Hamblen, A. D. "What Are Death Rates in Massachusetts Doing?" *New Eng. Jr. Med.* CCVIII: (June 22, 1933), 1313–6.

Bolduan, C., and Weiner, L. "Causes of Death Among Jews in New York City." *New Eng. Jr. Med.* CCVIII: (February 23, 1933), 407–16.

Britten, R. H. "Trends of Health in United States." *P. H. Rep.* XLVIII: (January 13, 1933), 27.

Dublin, L. I. *To Be or Not to Be* (Suicide). New York, Harrison Smith and Robert Haas. 1933. 443 pp. $3.50.

Nascher, I. L. "The Baneful Psalm of Moses" (Reprinted). *Mind & Body* XXXIX: (March, 1933), 339–42.

Parkhurst, E. "Resident Mortality from Tuberculosis in Urban and Rural New York." *Am. Jr. Pub. Health* XXIII: (September, 1933), 901–9.

Scott, R. W. "Forty Years Old or Forty Years Young? Life Expectancy and Diseases of Middle Age." *Hygeia* XI: (January, 1933), 42–5; (February, 1933), 149–51, 181–3.

Wu, C. K., and Winslow, C.-E. A. "Mortality, Prosperity and Urbanization in United States Counties." *Amer. Jr. Hyg.* XVIII: (November, 1933), 491–542.

Wynne, S. W. "Why and Where Our Babies Die." *Amer. Jr. Dis. Child* XLV: (May, 1933), 1143–52.

WINTER SPORTS

Baldwin, H. W. "Hockey Fundamentals." *Ath. Jr.* XIII: (January, 1933), 26–8.

Claussen, W. "Skate and Ski-Sailing." *Camp Life* V: (January, 1933), 13–4, 19.

"Fast and Exciting Games Played with Snowballs." *Pop. Sci. Mo.* CXXII: (January, 1933), 63.

Livermore, R. "April Skiing on Mount Washington." *Sportsman* XIII:3 (March, 1933), 36–7.

Merrill, L. F. "Snowshoe Making Is Easy." *Pop. Sci. Mo.* CXXII:2: (February, 1933), 68–9.

Walmsley, L. "Purchasing Points of Winter Sports Equipment." *Recr.* XXVI: (February, 1933), 528–30, 547.

Youngquist, A. M. "How to Build the Latest Type of Racing Ice Yacht." *Pop. Sci. Mo.* CXXII: (January, 1933), 64–5; (February, 1933), 80–1, 87.

WOMEN

Dress, Exercise, Health

Barr, M. C. "Résumé of the Physical Education Activity Program in Colleges for Women." RES. QUAR. IV: (October, 1933), 117–31.

Barton, H. M. "Story of Speedball for Women." *Jr. H. & P. E.* IV: (October, 1933), 38–40, 59–60.

Bullock, M., and Alden, F. D. "Some of the Factors Determining the Attitude of Freshmen Women at the University of Oregon Toward Required Physical

Education." RES. QUAR. IV: (December, 1933), 60–70.

Denniston, H. D. "The Relation of Abdominal Strength to Dysmenorrhea." RES. QUAR. IV: (October, 1933), 76–7.

Dickinson, R. L., and Beam, L. *The Single Woman*. Baltimore, Md., Wm. Wood & Co. 1933. 465 pp. $5.00.

Dobbins, E. "Corrective and Developmental Activities for Girls." *Education* LIII: (April, 1933), 463–7.

Driftmier, E. "Individual Differences in Interest and Physical Traits as Related to High School Girls in Physical Education." RES. QUAR. IV: (March, 1933), 198–220.

Hamer, M. J. "Dysmenorrhea and Its Relation to Abdominal Strength as Tested by the Wisconsin Method." RES. QUAR. IV: (March, 1933), 229–37.

Hansen, C. "Music as an Aid in Women's Gymnastics." *Mind & Body* XXXIX: (January, 1933), 266–71.

Lee, M. "A Consideration of the Fundamental Differences Between Boys and Girls as They Affect the Girls' Program of Physical Education." *Education* LIII: (April, 1933), 467–71.

Noyes, E. "A Survey of Methods of Grading Women in Individual Gymnastics in Colleges and Universities." RES. QUAR. IV: (October, 1933), 71–5.

Palmer, I. "Personal Qualities of Women Teachers of Physical Education." RES. QUAR. IV: (December, 1933), 31–48.

Post, J. H., and Shirley, M. J. *Selected Recreational Sports for Girls and Women*. New York, A. S. Barnes & Co. 1933. 132 pp. $2.00.

Renshow, J. E. Analysis of High School Girls' Basketball in Terms of Frequency of Occurrence of Technical Elements of the Games. Grad. Thesis. Wellesley College. 1933.

MISCELLANEOUS

Affleck, G. B. "Bibliography for 1932." RES. QUAR. IV: (December, 1933), 118–47.

Berry, C. S. "A Broader Concept of Physical Education." *Recr.* XXVII: (April, 1933), 6–8, 41–2.

Blair, H. (Editorial) "Objectives in Physical Education." *Education* LIII: (April, 1933), 504.

"Clinics of Physical Education Directors of Large Cities." *Ath. Jr.* XIII: (April, 1933), 26–32.

Cornwall, O. K. "Psychology of Motor Skills." RES. QUAR. IV: (March, 1933), 126–30.

Cutts, O. F. "President's Address, Thirty-Fifth Anniversary, College Physical Education Association." RES. QUAR. IV: (March, 1933), 1–4.

Davis, E. C. "A Study of the Interests of The Pennsylvania State College Freshmen in Certain Formal and Natural Physical Activities." RES. QUAR. IV: (December, 1933), 49–59.

Dunning, D. E. Reliability of Reaction Time Tests. Grad. Thesis. Wellesley College. 1933.

"Are Health Education, Physical Education, and Athletic Education Worth Saving?" (Editorial). *Ath. Jr.* XIII: (April, 1933), 21–2.

Erickson, J. A Study in Juvenile Delinquency. Springfield College, Grad. Thesis. 1933. 147 pp.

Falk, I. S. *et al. The Costs of Medical Care*. Chicago, Univ. of Chicago Press, 1933. 623 pp. $4.00.

Fuhrer, J. W. "Physical Education for Young Men." *Jr. Phys. Educ.* XXXI: (September, 1933), 11–6.

Giauque, C.D. "The Adaptation of Physical Education to Individual Needs." *Education* LIII: (April, 1933), 461–3.

Haldane, J. B. S. *Science and Human Life*. New York, Harper & Bros., 1933. 287 pp. $2.50.

Kelley, C. C. Experiment in Measuring Accuracy and Reaction Time in Basketball Officiating. Springfield College. Grad. Thesis, 1933. 130 pp.

Lawton, S. "The Heart as a Physical Director's Problem." *Jr. Phys. Educ.* XXXI: (November-December, 1933), 26–7.

Lowman, G. S. "The Physical Director's Responsibility in the Present Crisis." *Ath. Jr.* XIV: (October, 1933), 18–9, 47.

Messerschmidt, R. "Responses of Boys Between the Ages of Five and Sixteen Years to Hull's Postural Suggestion

Test." *Jr. Genet. Psych.* XLIII: (December, 1933), 405–21.

Monroe, H. B. "Y.M.C.A. Physical Directorship." *Jr. Phys. Ed.* XXX: (January, 1933), 95–6.

Patry, F. L. "A Psychiatrist Looks at Physical Education." *Mind & Body* XXXIX: (January, 1933), 249–55.

"Pertinent Paragraphs on Physical Education." *Ath. Jr.* XIV: (September, 1933), 30–4.

Plant, J. S. "Man's Chief Mode of Expression" (Motor Channels). *Recr.* XXVII: (October, 1933), 333, 349.

Rogers, F. R. "Fundamental Policies and Measures in Required Physical Education." RES. QUAR. IV: (March, 1933), 118–25.

Rogers, J. E. "What Is Civilization Doing to Us?" *Jr. Phys. Educ.* XXX: (January, 1933), 83–4, 97.

Scott, Z. "Physical Education from the Superintendent's Point of View." *Jr. H. & P. E.* IV: (May, 1933), 8–9, 56–7.

Williams, J. F. "Physical Education and the Depression." RES. QUAR. IV: (March, 1933), 9–14.

ADDENDA

Allen, H. "Mechanics of the Breast Stroke." *Beach & Pool* VII: (October, 1933), 305, 322–3.

Bender, E. "Details of Continuous Purification of Water for a Physio-Therapy Pool." *Beach & Pool* VII: (November, 1933), 333–4.

Chadwick, H. D. "Early Detection of Pulmonary Tuberculosis." *N. Y. State Jr. Med.* CCVIII: (June 1, 1933), 1143+.

Cureton, Jr., T. K. "A Scientific Pedagogy of Swimming and Diving." *Beach & Pool* VII: (July, 1933), 214, 227, 229.

———. "Observations and Tests of Swimming at 1932 Olympic Games." *Beach & Pool* VII: (August, 1933), 241–4, 253, 255, 258.

———. "Natural and Artificial Buoyancy, Flotation and Body Balance in Water." *Beach & Pool* VII: (September, 1933), 272, 282–5, 287.

Frost, W. H. "Risk of Persons in Familiar Contact with Tuberculosis." *Am. Jr. Pub. Health* XXIII: (May, 1933), 426–32.

Greene, M. B. "Occupational Therapy: Growth of a New Profession." *Hygeia* XI: (April, 1933), 330–3.

Hedges, G. G. *Indoor and Community Games.* Philadelphia. J. B. Lippincott, 1933, 160 pp. $1.50.

"High Standards of Design and Operation." *Beach & Pool* VII: (February, 1933), 40–2, 46.

Irwin, T. D. and Hachberg, N. M. "The Art of Vacationing." *Hygeia* XI: (June, 1933), 498–502.

Kieffer, J. C. "Planning the Handicraft Program." *Recr.* XXVII: (June, 1933), 141–4, 157–8.

Lattimer, N. *III. Olympic Winter Games, Lake Placid, 1932.* New York. *Amer. Olym. Com.* 1933. 291 pp. $2.00.

Laveaga, R. E. "Aids in Making Class Volleyball Period Interesting." *Jr. Phys. Ed.* XXX: (February, 1933), 115–6.

———. "Techniques for Intensive Volleyball." *Jr. Phys. Ed.* XXX: (March, 1933), 134–5; (April 1933), 143–4.

Longfellow, W. E. "The Modern Life Guard." *Beach & Pool* VII: (September, 1933), 269, 288, 293.

Lowman, C. L. "Physical Therapy Under Water." *Beach and Pool* VII: (June 1933), 174–5; (July 1933), 209, 222, 224.

Moseley, W. H. "Chloramines in Swimming Pool Sterilization." *Beach & Pool* VII: (June, 1933), 176.

Palmer, C. "Removing Rural School Handicaps to Mental Accomplishment." *Hygeia* XI: (September, 1933), 788–90.

Proctor, C. N. and Stephens, R. R. *Art of Skiing.* New York, Harcourt & Brace. 1933, 204 pp. $2.

Ravenel, M. P. "Tuberculosis of Bovine Origin." *Am. Jr. Pub. Health* XXIII: (April 1933), 316–8.

Scott, W. J. (Chm.). "1932 Report of Joint Committee on Swimming Pools and Other Bathing Places." *Beach & Pool* VII: (January, 1933), 48–50.

Schniebs, O. and McCrillis, J. W. *Modern Ski Technique.* Brattleboro, Vt., Daye Press. 1933, 111 pp. $1.25.

Schneider, H. and Fanck, A. *The Wonders of Skiing.* New York. Scribner, 1933, 268 pp. $7.50.

Walker, K. M. *Preparation for Marriage.* New York, Norton, 1933. $2.00.

BOOK REVIEWS

THE DUTIES OF OHIO PUBLIC HEALTH COMMISSIONERS. W. W. Charters and Darwin A. Hindman. Ohio Public Health Association in Cooperation with the Bureau of Educational Research. (Ohio State University, 1933) 70 pages. $1.00.

The Duties of the Ohio Public Health Commissioners represents a scientific, exhaustive inquiry into the duties, functions, and problems of health commissioners in the State of Ohio. The purpose of the study was primarily "to secure a definite basis for selecting the contents of courses for public health commissioners." This work represents the first attempt of this nature to be made, courses in public health administration heretofore being devised largely upon opinions.

The procedure in ascertaining the duties of the public health commissioner is novel in its approach to the problem. Several sources of similar data were studied from which some eleven hundred activities were selected. These eleven hundred activities were further classified into types of persons concerned, and types of activity carried on. From this analysis the completeness of the activities could be judged. In an effort to evaluate the activities listed, the health commissioners of Ohio were asked to check the list for those activities which they had performed. These results were still further classified and distributed into some twenty-six groups. Analyzing these groups, it was found that a large part of the duties of the health commissioners had to do directly with persons. The following opinion is deduced from a study of these groups.

"A study of the list clearly warrants the conclusion that the ability to carry on the duties of private practice in medicine does not guarantee ability as a public health commissioner. The duties of this public position seem so ponderously to be administrative, executive, educational, and personal."

After tabulating the activities of the public health commissioner and discovering the range of performance of such duties, another factor was studied; namely, the frequency of performance by the commissioner of these duties. That is, the importance was established by finding the duties performed most frequently and which hence should receive more attention than unusual activities. This should not be the only criterion of judgment, however, as is pointed out by the study. Such things as controlling an epidemic of smallpox should be crucial in the control of public health and should receive major attention.

Chapter III discusses and analyzes a list of activities, twenty-six in number, which are broken down into several parts describing the objects and materials with which the commissioner works as well as the actions that he carries on with these objects.

From the foregoing data a short course of twelve weeks was designed for persons who already had practical experience in public health work, many of whom were graduates of medical colleges. Hence no attempt was made to teach fundamentals of medical knowledge. Six units of study were chosen as the basis of this course:

Unit I. Laboratory and Engineering Technique

Unit II. Vital Statistics and Records

Unit III. Diagnosis of Communicable Diseases
Unit IV. Public Health Administration
Unit V. Health Education
Unit VI. Personal Relations

The group making this study has indeed made a contribution to public health education. While only a short course has yet been formulated from this exhaustive study, it is entirely possible to construct courses of longer duration to train individuals as modern, up-to-date, well-equipped, scientific public health commissioners.

The study makes no claim for universality, confining itself to the duties of public health commissioners in Ohio. However, in the United States the duties of public health commissioners will not differ widely in fundamentals nor in their contributions to the public they serve. Hence this study would be a valid foundation for the construction of a curriculum for public health officials in any state in the Union, with some slight adaptation to local needs. It will be interesting to see how a two- or four-year curriculum evolved from a study of these data compares with the curricula already in existence for this purpose.

This book will be of interest to every student of public health administration as well as to public health educators who are administering courses in the field of public health training and should result in a more scientific, comprehensive curriculum in this field.

The book has seventy pages, and contains numerous tables illustrating data collected throughout the study.

CLAIR V. LANGTON, Dr.P.H.
Director, Department of Physical Education for Men, Oregon State Agricultural College, Corvallis, Oregon

HEREDITY AND ENVIRONMENT: STUDIES IN THE GENESIS OF PSYCHOLOGICAL CHARACTERISTICS. Gladys C. Schwesinger. (The Macmillan Company, 1933), 479 pages. $4.00.

How far are intelligence and personality due to heredity, and how far are they dependent upon training or, in general, the environment? This volume without a doubt represents the most comprehensive survey as yet published concerning this ancient question, for only within the past two decades has it been possible to consider the problem as one for objective scientific research, inasmuch as the scientist has had to await the development of tools of measurement and of experimental techniques. Previous studies had most largely stressed the hereditary basis; this work, timely enough, has devoted itself more largely to a better understanding of our nurture. Not only does the book skillfully assemble the factual and experimental materials which concern the changes in conditions affecting human life as a whole, but also those dealing with the social and personal characteristics of the individuals who make up human society.

Following a review of the various methods used by psychologists in measuring intelligence and personality, the layman acquires an insight into the clinical method, that of direct observation and its difficulties, and the genetical, sociological, and psychiatric approaches. Consideration is given the various tests involved and the light which the measurements thus obtained throw on the interaction of heredity and environment in producing human characteristics. Recourse is then had to Galton's insight in attacking the problem, and an analysis is made of the data secured through extensive researches on the intellectual similarities and differences of identical twins—derived from the same egg cell—when reared apart. Next, children adopted into foster homes are compared with their biological and foster relatives and with groups of children who have become affected by disease, accident, physical impediments, educational deficiencies, rural and urban residency, and many other cultural and social factors operating in the American population of today.

The fifth chapter, unquantitative in its considerations, is concerned with the viewpoints of the leading schools of psychology and psychiatry on the per-

sonality, and here one may garner in convenient form the opinion of the behaviorist, social psychologist, psychoanalyst, the Gestalt psychologist, and numerous others as to the problem at hand. Briefly, the approach here is philosophic rather than scientific, the author granting that an adequate understanding of personality can profit by the contributions of all these schools.

The conclusion is that personality is dynamic, not static. It is never the same twice, either for two individuals at the same time, or for the one individual at different times. It does not conform to the laws applicable to a machine, nor does its growth actually cease, being subject to change and modification while life lasts. However, in most people it seems more or less stabilized around the age of thirty. The findings of the volume constitute a warning against hasty judgments in the field of eugenics, and against the subjective treatment which this topic has received in the past. Moreover, it excells as a reference work in psychological measurements, and as a survey of studies on the developmental origin of mental characteristics.

N. M. GRIER
Associate Editor, The American Midland Naturalist

CORRECTIVE PHYSICAL EDUCATION. Josephine M. Rathbone. (W. B. Saunders Company, 1934) 292 pages. $2.50.

In this book Miss Rathbone has set herself the task of describing and defining corrective physical education in terms of the modern understanding of the purposes and methods of education on the one hand, and of a wide realization of individual needs, on the other.

Condensed as it is in exposition, and practical in its direct application to conditions, the book impresses one as much, if not more, by the breadth of experience and study that have gone into it, and by the clear mental conception of the problems with which it deals.

Corrective physical education may be considered as an adjunct to physical education where there are needs for preparation or "reconstruction" of the individual for participation in activities. It may be a tool of the surgeon, either before or after operative procedures or in special cases, or of the physician during the convalescence of patients as an aid to normal complete recovery from illness.

To the psychiatrist, physical therapy as occupational, recreational, or as physical measures employed for the relief of unpleasant feelings, either emotional or physical, may be a valuable aid in strengthening the forces employed to restore mental balance. To the school administrator, teacher, or parent it may be the means whereby delicate, sensitive or otherwise handicapped children are enabled to develop strength, courage, self-confidence, and control. A process of such wide application should be based on sound information furnished by the sciences of anatomy, physiology, and psychology, by modern conceptions of the educational process and by acquaintance with those special techniques employed by the surgeon, psychiatrist, or social reconstructionist. Therefore Miss Rathbone properly introduces thoroughly pertinent and practical chapters on the significant facts of joint and segment anatomy, muscular function and physiology, so carefully related to the work and problems of the teacher of corrective physical education as to form a necessary working basis for an intelligent use of physical therapeutics.

In the chapter on "Faulty Development" one is impressed by the wide range of items included as factors in promoting faulty development, and by the sensible attitude toward increased normal or abnormal curves of the spine and deformities of the chest.

The long chapter on corrective exercises is well arranged and well written. There is clear discussion where points need explanation and brief comment where it may be most effective, although as a rule the name or description of the exercise and an illustrative line drawing suffice to carry the meaning. The exercises selected are both simple and effective, soundness rather than number evidently having been the criterion employed.

The last three chapters treat respectively of the special function of corrective physical education with respect to orthopedic conditions, disease and injuries, mental conditions, and school problems.

An adequate glossary of scientific terms and a selected, classified bibliography and index occupy the last forty-five pages of the book.

Miss Rathbone's style is clear, forceful, and concise. Her ability to fasten upon the gist of a matter, to express it clearly, and make a pertinent application will make her book a boon to students and a valued aid to teachers. To the practising "reconstructionist" or physical therapist it will bring breadth of view, up-to-date opinions and practices, and an appreciation of the number of conditions, physical, emotional, and mental, for which some form of physical therapy is applicable, as well as the variety of means which may be employed in reconstruction work. One will be induced also, to renew one's explorations into the underlying sciences and the overlying arts, between which the shuttle of corrective physical education is plying to and fro to reinforce or rebuild in the individual the lacks brought about by unfortunate heredity or environment.

SARAH R. DAVIS
University of California, Berkeley, California

GENERAL BIOLOGY. E. Grace White, Ph.D. (C. V. Mosby Co., 1933) 615 pages. $3.00.

Dr. White has produced an outstanding contribution covering the field of general biology. Her style is lucid, concise, and interesting. She writes with facility and with that charm which comes only to those who have thoroughly mastered their subject. She has accomplished the difficult task of presenting technical details in such a manner that the dullest student could not fail to be interested and curious. There is a continuity to her book which lends itself ideally to those who are presenting orientation courses. In a word, she makes biology a living and challenging drama.

The book is richly and aptly illustrated with 295 splendid and pertinent diagrams many of which are original and unique in their excellence. There is a carefully chosen bibliography embracing 101 books which encompass the different aspects of biological science, and the selection is especially good in that students of widely different training could read the books without boredom.

An extensive and excellent glossary and index are also appended, these being two features which add greatly to the usefulness of a text book.

The outstanding attribute of the volume lies in the fact that it could be used over such a wide range in the teaching field. Any intelligent child of ten or twelve could read it with profit and interest. The writer speaks in this respect upon the basis of actual trial. Notwithstanding the above point the book lends itself remarkably to the junior college and college level and even to science or other survey courses at university levels.

Dr. White deals skillfully with the problem of presenting subject matter interestingly. Materials studied are easily available. The book is divided into three main parts, all of which are interrelated and any of which may be transposed without disturbing sequence.

The first section deals with animal and plant organisms and life as a total phenomenon. Part two deals with the completeness of the animal and plant kingdom. Part three deals with such problems as genetics, the endocrines, evolution, and a host of other topics.

There would be no purpose in giving a detailed recounting of the actual subject matter set forth. Those who know the field of biology have this already in mind and those who do not, might well turn to Dr. White's book and learn. Suffice it to say that this book is complete and views the living process as a progressive, interrelated, and integrated drama. It is a text book which offers interesting reading material to the uninitiated and a real stimulus and foun-

dational substratum to the student. This writer can and does heartily endorse this volume and is using it in connection with courses given by him.

SHAILER UPTON LAWTON, M.D.
New York University

MENTAL HYGIENE OF THE SCHOOL CHILD. Percival M. Symonds, Ph.D. (The Macmillan Co., 1934) 321 pages. $1.50.

Educationists have for some time given lip service to the ideal of education of the "whole child." Due, perhaps, to the dead weight of tradition plus the inconvenience of curriculum reorganization, relatively little has been done in practice to make this ideal an educational reality. In most schools, marks purporting to indicate acquisition of subject matter are still the chief criterion of education. Children's points of view; the ways they feel about life; the permanent attitudes and interests developed are given secondary consideration. The struggle for existence which many of the so-called "non-academic" areas are now having is indicative of the general myopia present in many laymen and school administrators.

Much of our difficulty is no doubt due to the fact that, as yet, most of the important outcomes of education are capable of only crude quantitative measurement.

Dr. Symonds' past thought and research on problems of personality and conduct have been important educational contributions. His most recent volume is the result of his impressions and observations while serving as chairman of the subcommittee on mental hygiene in schools of the White House Conference on Child Health and Protection.

The author starts with the obvious, but often overlooked, fact that all conduct is symptomatic and fills his volume with positive suggestions for preventive mental hygiene rather than with the technical remedial treatment of unusual problem cases. The reader is carried through a wide range of orderly discussion from mechanisms of adjustment in the satisfaction of drives, the analysis of behavior patterns, sex adjustments, the teacher's part in developing mental hygiene to the practical organization of the school in the interests of mental hygiene.

This volume is an important contribution to the furtherance of the mental hygiene point of view in education because it is written in non-technical language primarily for teachers and its mental hygiene principles are directly applicable to school situations.

Not only should it be welcomed as a good beginning text in mental hygiene for students of education but also as a worth-while reference book for parents whose educational mal-practice the schools are in a large measure called upon to undo.

CHARLES C. COWELL
The Ohio State University

INTRODUCTION TO PHYSICAL EDUCATION. J. R. Sharman, Ph.D. (A. S. Barnes and Company, 1934) 317 pages. $2.00.

In the past few years much attention has been paid to the proper orientation of prospective teachers in the field of health and physical education. This orientation program, however, called for a textbook which was especially adapted to this kind of work and until recently none was available. With this purpose in mind the author attempted to provide a text which gave a comprehensive view of physical education for the entire school system and he has succeeded in producing a work that is both timely and to the point.

The author is exceptionally well prepared to speak with authority upon matters pertaining to the physical education of pupils on all educational levels, having served with distinction in public school, state, and university fields. He has selected the material for his book with respect to its scientific accuracy and has arranged it so that the emphasis is upon its practical application to modern teaching situations.

A statement of a few of the chapter headings will serve to show the thoroughness with which the author has treated his subject:

The Functional Basis of Physical Education
The Development of Modern Physical Education
The Aims and Objectives of Physical Education
The Health Service and Supervision Program
The Health Instruction Program
Foundation of Method in Physical Education
Psychology of Physical Education
Lesson Planning and Motivation
The Classification of Pupils and Organization of Competition
The Administration of Athletics
Physical Education as a Vocation

The value of the book as a text has been enhanced by the inclusion of a group of pertinent questions at the end of each chapter. The instructor of professional students will find these questions a distinct aid in the teaching process.

This book is worthy of a place in any educational library and certainly should be a part of the equipment of every educator who is concerned with the professional preparation of teachers of health and physical education.

HARRY A. SCOTT, Ph.D.
Professor of Physical Education, The Rice Institute

HEALTH FACTS FOR COLLEGE STUDENTS. Maude Lee Etheredge, M.D., Dr.P.H. (W. B. Saunders Company, 1933) 342 pages. $2.00.

It is obvious that this book is the result of a course or courses given in hygiene to college students. Its objectives and its subject matter are adapted to the freshman level. The volume is largely filled with facts of anatomy and physiology which are requisites to living wholesomely and intelligently. The adaptation of these scientific facts to actual living is interestingly suggested.

The author recognizes the many adjustments which must be made by entering college students to the new social construct in which they find themselves. If these adjustments are made successfully and healthfully, knowledge and practice of mental, social, and physiological health are essential to each student. Referring to the fact that "Unfortunately, statistics show that college graduates have little knowledge of the very elementary laws of health and their practical application," Dr. Etheredge presents concrete information to aid in the attainment of healthy and happy living.

The reviewer cannot refrain from quoting a sentence which will probably gain wide quotation because of its evident truth. Dr. Etheredge states that self-confidence is a characteristic of sound mental health. In making a distinction between self-confidence and conceit this statement is found, "The person with self-confidence grows; while the one with conceit only swells." Her counsel in hygiene is simple, pointed, and scientific.

In addition to attention to individual hygiene, *Health Facts for College Students* considers the communicable diseases, sanitation, and the nature of the community health program. This book should be interesting and informative reading for college freshmen.

ROSS L. ALLEN
Washington Junior High School, Rochester, New York

ERRATUM

"I regret the necessity for calling attention to a most unfortunate error on the part of the writers in the paper 'The Organization of Physical and Motor Traits in Junior High School Boys,' by C. E. Ragsdale and Irving J. Breckenfeld, in the October number of the RESEARCH QUARTERLY.

"The scores in the fifty-yard dash, the dribble and base running were, through a grave oversight, not transformed into *velocity* scores. I assumed that this had been done and based my discussion upon that assumption. This error has the effect of changing the sign for all the correlations of these three tests with all the others. The conclusions based upon these correlations are likewise reversed."—*Signed C. E. Ragsdale.*

Cumulative Author and Subject Matter Index for Vol. V (1934)

Research Quarterly of the American Physical Education Association

Numbers refer to: First—Number of Issue; Second—Page Number, e.g., 3:114-116 refers to No. 3 (October) pages 114-116.
No. 1, March; No. 2, May; No. 3, October; No. 4, December.

Sup. 1, (March) University of Iowa Studies in Physical Education, No. 1.
Sup. 2 (December) George Williams College Physical Education Institute.

ADAMS, Eleonore Groff
The Study of Age, Height, Weight, and Power As Classification Factors for Junior High School Girls. 2:95-100.

AFFLECK, G. B.
Bibliography for 1933. 4:127-150.

ALWAY, Leonore K.
Weight Variation Percentage Chart. 1:110-111.

ANDERSON, Theresa W.
Attitudes of High School Girls toward Physical Activities. 4:49-61.

APPARATUS
Committee Report on Gymnasium and Athletic Field Equipment. Carl H. Burkhardt, Chairman. 3:85-96.

ATHLETICS
The Apparent Importance of Arm Strength in Athletics, C. H. McCloy. 1:3-11.
Athletic Ability and Scholarship. E. C. Davis and J. A. Cooper. 4:68-78.
College Alumni Evaluate Intercollegiate Athletics. M. N. Thisted. 2:77-94.
Comparison of the Subject Elections and The Scholastic Records of Athletes and Non-Athletes. H. S. Jones. 4:101-110.
Coordination Tests in Swimming. C. T. Wilson. 4:81-88.

BELL, Margaret
A Further Study of Dysmenorrhea in College Women—University of Michigan. 1:49-62.

BENDER, W. R. G.
Factors Contributing to Speed in the Start of a Race and Characteristics of Trained Sprinters. Sup. 1:72-78.

BIBLIOGRAPHY
Bibliography for 1933. Affleck. 4:127-150.

BOOK REVIEWS
1:138-144; 2:132-144; 3:136-144; 4:151-156.

BRECKENFELD, Irving J. & Ragsdale, C. E.
The Organization of Physical and Motor Traits in Junior High School Boys. 3:47-55.

BRESNAHAN, George T.
A Study of the Movement Pattern in Starting a Race from the Crouch Start. Sup. 1:5-11.

BRONSON, Alice Oakes
A Study of State Physical Education Associations. 1:112-137.

BROGDON, Elizabeth, Frances A. Hellebrandt, Lucile Hutaff, Catherine Wenchell.
An Investigation of the Influence of Exercise Upon Digestion in The Stomach. 2:52-62.

BURKHARDT, Carl H., Chairman
Committee Report on Gymnasium and Athletic Field Equipment. 3:85-96.

CHEVRAUX, Grace E.
The Placement, Follow-Up and Guidance of Teachers. 2:44-51.

CLEVETT, Melvin A.
The Interests and Participation of Boys in Voluntary Physical Education Activities. 3:27-42.
Pathways to Personality—A Pageant. Sup. 2:46-54.

COLLEGE
Causes of College Sport Accidents. Floyd R. Eastwood. 3:63-69.
A Comparative Study of the Effects of the Financial Depression on Certain Vocational Aspects of College Physical Education. Harry A. Scott. 3:97-106.
A Discussion of the Requirement in Physical Education for Women in Colleges and Universities. Violet B. Marshall. 4:3-17.
A Further Study of Dysmenorrhea in College Women. Margaret Bell. 1:49-62.
Grading Student Achievement in Golf Knowledge. Mary Agnes Murphy. 1:83-90.
The Problem of the Nutritional Status of a College Group. George B. Gammon. 1:31-33.

COLLINS, Laurentine B., Chairman
Curriculum Study for the Public Schools Section of the A.P.E.A. 4:111-126.

COMMITTEE REPORTS
Committee Report on Gymnasium and Athletic Field Equipment. Carl H. Burkhardt, Chairman. 3:85-96.
Curriculum Study for the Public Schools Section of the A.P.E.A. Laurentine B. Collins, Chairman. 4:111-126.
Report of the Committee on Curriculum Research. Wm. R. LaPorte. 2:121-131.
Report of the A.P.E.A. Committee on Physical Examinations for Girls and Women. Gertrude Moulton, Chairman. 3:14-26.
Report of Committee on Objectives and Policies. W. W. H. Mustaine, Chairman. 4:29-43.
Reports of Institute Groups. Sup. 2:55-59.
Standards in Physical Education Costumes for Girls and Women. Clare Small. 3:70-84.

COOPER, John A., and Elwood C. Davis
Athletic Ability and Scholarship. 4:68-78.

CORRECTIVE
Some Evidence of the Value of a Therapeutic Program. Hope Tisdale. 3:56-62.
Posture Photography. Bertha H. Leonard. 4:79-80.

COZENS, F. W., and N. P. Neilson
Achievement Scales in Physical Education Activities for Boys and Girls in Elementary and Junior High School. 3:3-13.

CURRICULUM
The Curriculum in Health Education for Teachers of Elementary Grades. Philomena Supper. 3:107-122.
Curriculum Content and Suitable Minors. M. E. Rugen. 4:89-100.
Curriculum Study for the Public Schools Section of the A.P.E.A. L. B. Collins, Chairman. 4:111-126.
Report of the Committee on Curriculum Research. Wm. R. LaPorte. 2:121-131.

DANCING
A Study of the Use of Percussion Instruments as Accompaniment in the Dance. Harriett K. Graham. 1:12-30.

DAVIS, Elwood C., and John A. Cooper
Athletic Ability and Scholarship. 4:68-78.

DENKMANN, Dorothy, and Thelma M. Kenefick
The Effect of the Application of Cold and Heat on the Activity of the Intact Muscle of the Human. Sup. 1:92-98.

DEPRESSION
A Comparative Study of the Effects of the Financial Depression on Certain Vocational Aspects of College Physical Education. Harry A. Scott. 3:97-106.

DIMOCK, Hedley S.
The Professional Equipment of the Modern Physical Educator. Sup. 2:39-45.

DICKINSON, A. D.
The Effect of Foot Spacing on the Starting Time

and Speed in Sprinting and the Relation of Physical Measurements to Foot Spacing. Sup. 1:12-19.

DRAMATICS
Pathways to Personality—A Pageant. Melvin C. Clevett. Sup. 2:46-54.

EASTWOOD, Floyd R.
Causes of College Sport Accidents. 3:63-69.

ELEMENTARY SCHOOL
The Curriculum in Health Education for Teachers of the Elementary Grades. Philomena Supper. 3:107-122.
Curriculum Study for the Public Schools Section of the A.P.E.A. L. B. Collins, Chairman. 4:111-126.
The Education of Men Teachers of Physical Education for Public School Service. W. E. Peik and G. B. Fitzgerald, 4:18-28.
Report of the Committee on Objectives and Policies of the Public Schools Section. W. W. H. Mustaine, Chairman. 4:29-43.

EXAMINATION
Report of the A.P.E.A. Committee on Physical Examinations for Girls and Women. Gertrude E. Moulton, Chairman. 3:14-26.

FELKER, Arnold H.
A Study of the Respiratory Habits of Sprinters in Starting a Race. Sup. 1:20-26.

FITZGERALD, G. B. and W. E. Peik
The Education of Men Teachers of Physical Education for Public School Service in Selected Colleges and Universities. 4:18-28.

FOSSE, Margaret Anne, Dorothy Kelso, and Fae Henry
The Effect of Massage upon Peripheral Circulation Measured by Skin Temperature. 1:34-41.

FREEMAN, Frank
Contributions from Psychology to a Symposium on Personality and Physical Education. Sup. 2:29.

GAMMON, George B.
The Problem of the Nutritional Status of a College Group. 1:31-33.

GRAHAM, Harriett K.
A Study of the Use of Percussion Instruments as Accompaniment in the Dance. 1:12-30.

GRISIER, Gertrude J.
The Construction of an Objective Test of Knowledge and Interpretation of the Rules of Field Hockey for Women. Sup. 1:79-81.

HEALTH
A Further Study of Dysmenorrhea in College Women. Margaret Bell. 1:49-62.
An Investigation of the Influence of Exercise upon Digestion in the Stomach. Elizabeth Brogdon, Frances A. Hellebrandt, Lucile Hutaff, and Catherine Wenchell. 2:52-62.
The Problem of the Nutritional Status of a College Group. George B. Gammon. 1:31-33.

HEALTH EDUCATION
The Curriculum in Health Education for Teachers of Elementary Grades. Philomena Supper. 3:107-122.
A Study of Collateral Readings for Use in the Teaching of Health (Mental and Social Hygiene). Luella Reckmeyer. Sup. 1:99-109.
A Survey of Health Instruction in Senior High Schools. D. C. Mitchell. 3:127-135.

HELLEBRANDT, Frances A., Elizabeth Brogdon, Lucile Hutaff, and Catherine Wenchell
An Investigation of the Influence of Exercise upon Digestion in the Stomach. 2:52-62.

HELLEBRANDT, Frances A., and Meryl M. Miles
The Influence of Exercise on the Rate of Passage of Inert Material Through the Digestive Tract. 1:73-82.

HENRY, Fae, Dorothy Kelso, Margaret Anne Fosse
The Effect of Massage upon Peripheral Circulation Measured by Skin Temperature. 1:34-41.

HIGH SCHOOL
Attitudes of High School Girls Toward Physical Activity. Theresa W. Anderson. 4:49-61.
A Comparative Study of Methods of Classifying Pupils into Homogeneous Groups for Physical Education. Joy Kistler. 1:42-48.
A Comparison of the Subject Elections and the Scholastic Records of Athletes and Non-Athletes. H. S. Jones. 4:101-110.
Curriculum Study for the Public Schools Section of the A.P.E.A. L. B. Collins, Chairman. 4:111-126.
The Study of Age, Height, Weight, and Power as Classification Factors for Junior High School Girls. Eleonore G. Adams. 2:95-100.
A Survey of the Extent of High School Wrestling in the United States. B. E. Wiggins. 3:123-126.
A Survey of Health Instruction in Senior High Schools. D. C. Mitchell. 3:127-135.

HISTORY
Some High Spots in American Physical Education. E. D. Mitchell. Sup. 2:32-38.

HOSKINS, Robert N.
The Relationship of Measurements of General Motor Capacity to the Learning of Specific Psycho-Motor Skills. 1:63-72.

HUTAFF, Lucile, Elizabeth Brogdon, Frances A. Hellebrandt, and Catherine Wenchell.
An Investigation of the Influence of Exercise upon Digestion in the Stomach. 2:52-62.

JONES, Harmon S.
A Comparison of the Subject Elections and the Scholastic Records of Athletes and Non-Athletes. 4:101-110.

KARPOVICH, Peter V.
The Effect of Oxygen Inhalation on Swimming Performance. 3:23-30.

KELSO, Dorothy, Margaret Anne Fosse, and Fae Henry
The Effect of Massage upon Peripheral Circulation Measured by Skin Temperature. 1:34-41.

KENEFICK, Thelma M. and Dorothy Denkmann
The Effect of the Application of Cold and Heat on the Activity of the Intact Muscle of the Human. Sup. 1:92-98.

KISTLER, Joy W.
A Comparative Study of Methods of Classifying Pupils into Homogeneous Groups for Physical Education. 1:42-48.
A Study of the Distribution of the Force Exerted Upon the Blocks in Starting from Various Positions. Sup. 1:27-32.

LA PORTE, William R., Chairman
Report of the Committee on Curriculum Research. 2:121-131.

LEMON, Eloise and Elizabeth Sherbon
A Study of the Relationship of Certain Measures of Rhythmic Ability and Motor Ability in Girls and Women. Sup. 1:82-85.

LEONARD, Bertha H.
Posture Photography. 4:79-80.

LLOYD, Frank S.
Some Characteristics of Effective Physical Education for Personality Development. Sup. 2:3-17.

McCLOY, C. H.
The Apparent Importance of Arm Strength in Athletics. 1:3-11.
The Measurement of General Motor Capacity and General Motor Ability. Sup. 1:46-61.
A New Deal in Physical Education. Sup. 2:60-71.

MacNEIL, John P.
The Organization and Administration of Laboratory Experience in Teaching Physical Education. 2:101-120.

MARSHALL, Violet B.
A Discussion of the Requirement in Physical Education for Women in Colleges and Universities. 4:3-17.

METHODS
A Comparative Study of Methods of Classifying Pupils into Homogeneous Groups for Physical Education. Joy Kistler. 1:42-48.
The Reliability and Validity of the Questionnaire Method. Max Seham and Ole Schey. 2:31-43.

MILES, Meryl M., and Frances A. Hellebrandt
The Influence of Exercise on the Rate of Passage of Inert Material Through the Digestive Tract. 1:73-82.
MITCHELL, A. Viola
A Scoring Table for College Women in the Fifty-Yard Dash, the Running Broad Jump, and the Basketball Throw for Distance. Sup. 1:86-91.
MITCHELL, D. C.
A Survey of Health Instruction in Senior High Schools. 3:127-135.
MITCHELL, Elmer D.
Some High Spots in American Physical Education. Sup. 2:32-38.
MOSER, Helen and Genevieve Young
A Short Battery of Tests to Measure Playing Ability in Women's Basketball. 2:3-23.
MOULTON, Gertrude E., Chairman
Report of the A.P.E.A. Committee on Physical Examinations for Girls and Women. 3:14-26.
MURPHY, Mary Agnes
Grading Student Achievement in Golf Knowledge. 1:83-90.
MUSTAINE, W. W. H., Chairman
Report of the Committee on Objectives and Policies. 4:29-43.
NAKAMURA, H.
An Experimental Study of Reaction Time of the Start in Running a Race. Sup. 1:33-45.
NEILSON, N. P. and F. W. Cozens
Achievement Scales in Physical Education Activities for Boys and Girls in Elementary and Junior High Schools. 3:3-13.
OBJECTIVES
Report of the Committee on Objectives and Policies. W. W. H. Mustaine, Chairman. 4:29-43.
PHYSICAL EDUCATION
A Comparative Study of the Effects of the Financial Depression on Certain Vocational Aspects of College Physical Education, Harry A. Scott. 3:97-106.
A Comparative Study of Methods of Classifying Pupils into Homogeneous Groups for Physical Education. Joy Kistler. 1:42-48.
The Interests and Participation of Boys in Voluntary Physical Education Activities. M. A. Clevett. 3:27-42.
A New Deal in Physical Education. C. H. McCloy. Sup. 2:60-71.
The Relationship of Measurements of Motor Capacity to the Learning of Specific Psycho-Motor Skills. Robert N. Hoskins. 1:63-72.
Some Characteristics of Effective Physical Education for Personality Development. Frank S. Lloyd. Sup. 2:3-17.
Some High Spots in American Physical Education. E. D. Mitchell. Sup. 2:32-38.
PHYSIOLOGY
Contributions from Physiology to a Symposium on Physical Education and Personality. Arthur H Steinhaus. Sup. 2:18-28.
The Effect of the Application of Cold and Heat on the Activity of the Intact Muscle of the Human. Thelma Kenefick and Dorothy Denkmann. Sup. 1:92-98.
The Effect of Massage Upon the Peripheral Circulation as Measured by Skin Temperature. Dorothy Kelso, Margaret Anne Fosse, Fae Henry. 1:34-41.
The Influence of Exercise on the Rate of Passage of Inert Material Through the Digestive Tract. Frances A. Hellebrandt and Meryl M. Miles. 1:73-82.
An Investigation of the Influence of Exercise upon Digestion in the Stomach. Elizabeth Brogdon, Frances A. Hellebrandt, Lucile Hutaff, Catherine Wenchell. 2:52-62.
A Study of the Respiration of Golfers During the Drive and the Putt. Helen Schudel. Sup. 1:62-71.
What A Man Should Weigh. Rexford C. Quimby. 1:91-109.
POSTURE
Posture Photography. Bertha H. Leonard. 4:79-80.
PROFESSIONAL TRAINING
Curriculum Content and Suitable Minors. Mabel E. Rugen. 4:89-100.
The Education of Men Teachers of Physical Education for Public School Service. W. E. Peik and G. B. Fitzgerald. 4:18-28.
The Organization and Administration of Laboratory Experience in Teaching Physical Education. John P. MacNeil. 2:101-120.
The Placement, Follow-Up and Guidance of Teachers. Grace E. Chevraux. 2:44-51.
The Professional Equipment of the Modern Physical Educator. Hedley S. Dimock. 2:39-45.
PSYCHOLOGY
Contributions from Psychiatry to Personality Growth and Development. Claudia Wanamaker. Sup. 2:30-31.
Contributions from Psychology to A Symposium on Personality and Physical Education. Frank Freeman. Sup. 2:29.
Some Characteristics of Effective Physical Education for Personality Development. Frank S. Lloyd. Sup. 2:3-17.
QUIMBY, Rexford C.
What A Man Should Weigh. 1:91-109.
RAGSDALE, C. E. and Irving J. Breckenfeld
The Organization of Physical and Motor Traits in Junior High School Boys. 3:47-55.
RECKMEYER, Luella
A Study of Collateral Readings for Use in the Teaching of Health (Mental and Social Hygiene). Sup. 1:99-109.
RESEARCH
Athletic Ability and Scholarship. E. C. Davis and J. A. Cooper. 4:68-78.
Causes of College Sport Accidents. Floyd R. Eastwood. 3:63-69.
College Alumni Evaluate Intercollegiate Athletics. M. N. Thisted. 2:77-94.
The Effect of the Application of Cold and Heat on the Activity of the Intact Muscle of the Human. Thelma Kenefick and Dorothy Denkmann. Sup. 1:92-98.
The Effect of Oxygen Inhalation on Swimming Performance. Peter V. Karpovich. 3:23-30.
The Effect of Massage upon Peripheral Circulation as Measured by Skin Temperature. Dorothy Kelso, Margaret A. Fosse, Fae Henry. 1:34-41.
Flarimeter Tests of Physical Fitness. Philip V. Wells. 4:44-48.
The Influence of Exercise on the Rate of Passage of Inert Material Through the Digestive Tract. Frances A. Hellebrandt and Meryl M. Miles. 1:73-82.
The Interests and Participation of Boys in Voluntary Physical Education Activities. M. A. Clevett. 3:27-42.
An Investigation of the Influence of Exercise upon Digestion in the Stomach. Elizabeth Brogdon, Frances A. Hellebrandt, Lucile Hutaff, Catherine Wenchell. 2:52-62.
The Organization of Physical and Motor Traits in Junior High School Boys. C. E. Ragsdale and I. J. Breckenfeld. 3:47-55.
The Relationship of Measurements of General Motor Capacity to the Learning of Specific Psycho-Motor Skills. R. N. Hoskins. 1:63-72.
The Progressive-Part vs. the Whole Method of Learning Motor Skills. Clayton T. Shay. 4:62-67.
The Reliability and Validity of the Questionnaire Method. Max Seham and Ole Schey. 2:31-43.
Report of the Committee on Curriculum Research. Wm. R. LaPorte, Chairman. 2:121-131.
The Significance of Strength Tests in Revealing Physical Condition. Frederick Rand Rogers. 3:43-46.
ROGERS, Frederick Rand
The Significance of Strength Tests in Revealing Physical Condition. 3:43-46.
RUGEN, Mabel E.
Curriculum Content and Suitable Minors. 4:89-100.

SCHEY, Ole and Max Seham
The Reliability and Validity of the Questionnaire Method. 2:31-45.
SCHUDEL, Helen
A Study of the Respiration of Golfers During the Drive and the Putt. Sup. 1:62-71.
SCORING
Grading Student Achievement in Golf Knowledge. Mary A. Murphy. 1:83-90.
A Scoring Table for Women in the Fifty-Yard Dash, the Running Broad Jump, and the Baseball Throw for Distance. A. Viola Mitchell. Sup. 1:86-91.
SCOTT, Harry A.
A Comparative Study of the Effects of the Financial Depression on Certain Vocational Aspects of College Physical Education. 3:97-106.
SEHAM, Max and Ole Schey
The Reliability and Validity of the Questionnaire Method. 2:31-43.
SHAY, Clayton T.
The Progressive-Part vs. the Whole Method of Learning Motor Skills. 4:62-67.
SHERBON, Elizabeth and Eloise Lemon
A Study of the Relationship of Certain Measures of Rhythmic Ability and Motor Ability in Girls and Women. Sup. 1:82-85.
SMALL, Clare, Chairman
Standards in Physical Education Costumes for Girls and Women. 3:70-84.
SPORTS
Causes of College Sport Accidents. Floyd R. Eastwood. 3:63-69.
The Construction of an Objective Test of Knowledge and Interpretation of the Rules of Field Hockey for Women. Gertrude J. Grisier. Sup. 1:79-81.
Coordination Tests in Swimming. C. T. Wilson. 4:81-88.
The Effect of Foot Spacing on the Starting Time and Speed in Sprinting and the Relation of Physical Measurements to Foot Spacing. A. D. Dickinson. Sup. 1:12-19.
The Effect of Oxygen Inhalation on Swimming Performance. Peter V. Karpovich. 2:23-30.
An Experimental Study of Reaction Time on the Start in Running a Race. H. Nakamura. Sup. 1:33-45.
Factors Contributing to Speed in the Start of a Race and Characteristics of Trained Sprinters. W. R. G. Bender. Sup. 1:72-78.
Grading Student Achievement in Golf Knowledge. Mary A. Murphy. 1:83-90.
A Scoring Table for College Women in the Fifty-Yard Dash, the Running Broad Jump, and the Basketball Throw for Distance. A. Viola Mitchell. Sup. 1:86-91.
A Short Battery of Tests to Measure Playing Ability in Women's Basketball. Genevieve Young and Helen Moser. 2:3-23.
A Study of the Distribution of the Force Exerted upon the Blocks in Starting from Various Starting Positions. J. W. Kistler. Sup. 1:27-32.
A Study of the Movement Pattern in Starting a Race from the Crouch Position. George T. Bresnahan. Sup. 1:5-11.
A Study of the Respiration of Golfers During the Drive and the Putt. Helen Schudel. Sup. 1:62-71.
A Study of the Respiratory Habits of Sprinters in Starting a Race. Arnold H. Felker. Sup. 1:20-26.
A Survey of the Extent of High School Wrestling in the United States. B. E. Wiggins. 3:123-126.
STEINHAUS, Arthur H
Contributions from Physiology to a Symposium on Personality and Physical Education. Sup. 2:18-28.
SUPPER, Philomena
The Curriculum in Health Education for Teachers of Elementary Grades. 3:107-122.
TEACHING
The Placement, Follow-Up, and Guidance of Teachers. Grace E. Chevraux. 2:44-51.
Toward a "Code" for Physical Education Teachers. C. L. Walker. 2:63-76.
TESTS AND MEASUREMENTS
Achievement Scales in Physical Education Activities for Boys and Girls in Junior and Senior High School. N. P. Neilson and F. W. Cozens. 3:3-13.
The Apparent Importance of Arm Strength in Athletics. C. H. McCloy. 1:3-11.
The Construction of an Objective Test of Knowledge and Interpretation of the Rules of Field Hockey for Women. Gertrude G. Grisier. Sup. 1:79-81.
Coordination Tests in Swimming. C. T. Wilson. 4:81-88.
Flarimeter Tests of Physical Fitness. P. V. Wells. 4:44-48.
The Measurement of General Motor Capacity and General Motor Ability. C. H. McCloy. Sup. 1:46-61.
The Problem of the Nutritional Status of a College Group. George B. Gammon. 1:31-35.
A Short Battery of Tests to Measure Playing Ability in Women's Basketball. Genevieve Young and Helen Moser. 2:3-23.
The Significance of Strength Tests in Revealing Physical Condition. Frederick Rand Rogers. 3:43-46.
The Study of Age, Height, Weight, and Power as Classification Fastors for Junior High School Girls. E. G. Adams. 2:95-100.
Weight Variation Percentage Chart. Leonore Alway. 1:110-111.
What A Man Should Weigh. R. C. Quimby. 1:91-109.
THISTED, M. N.
College Alumni Evaluate Intercollegiate Athletics. 2:77-94.
TISDALE, Hope
Some Evidence of the Value of a Therapeutic Program. 3:56-62.
WALKER, Charles
Toward a "Code" for Physical Education Teachers. 2:63-76.
WANAMAKER, Claudia
Contributions from Psychiatry to Personality Growth and Development. Sup. 2:30-31.
WELLS, Philip V.
Flarimeter Tests of Physical Fitness. 4:44-48.
WENCHELL, Catherine, Elizabeth Brogdon, Frances A. Hellebrandt, and Lucile Hutaff
An Investigation of the Influence of Exercise upon Digestion in the Stomach. 2:52-62.
WIGGINS, B. E.
A Survey of the Extent of High School Wrestling in the United States. 3:132-136.
WILSON, Colin Theodore
Coordination Tests in Swimming. 4:81-88.
WOMEN
Attitudes of High School Girls Toward Physical Activities. Theresa W. Anderson. 4:49-61.
The Construction of an Objective Test of Knowledge and Interpretation of the Rules of Field Hockey for Women. Gertrude G. Grisier. Sup. 1:79-81.
A Discussion of the Requirement in Physical Education for Women in Colleges and Universities. Violet B. Marshall. 4:3-17.
A Further Study of Dysmenorrhea in College Women. Margaret Bell. 1:49-62.
Grading Student Achievement in Golf Knowledge. Mary A. Murphy. 1:83-90.
Report of the A.P.E.A. Committee on Physical Examinations for Girls and Women. Gertrude E. Moulton, Chairman. 3:14-26.
A Scoring Table for Women in the Fifty-Yard Dash, the Running Broad Jump, and the Basketball Throw for Distance. A. Viola Mitchell. Sup. 1:86-91.
A Short Battery of Tests to Measure Playing Ability in Women's Basketball. Genevieve Young and Helen Moser. 2:3-23.
A Study of the Relationship of Certain Measures of Rhythmic Ability and Motor Ability in Girls and Women. Eloise Lemon and Elizabeth Sherbon. Sup. 1:82-85.
Standards in Physical Education Costumes for Girls and Women. Clare Small. 3:70-84.
YOUNG, Genevieve and Helen Moser
A Short Battery of Tests to Measure Playing Ability in Women's Basketball. 2:3-23.